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Environmental Assessment

Establishing a Southern Appalachian Farmstead in the Chattooga Wild and Scenic River Corridor

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Oconee County, South Carolina

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CHAPTER 1 PURPOSE AND NEED FOR ACTION

1. SUMMARY

In 2009, the Oconee Heritage Center (OHC), a regional historical society non-profit organization, applied for a special use permit from the U.S. Forest Service to restore the existing Russell Farm Historic Site (Russell Farmstead) located on the Andrew Pickens Ranger District, Sumter National Forest. The proposal also would establish the Russell Farmstead as a Southern Appalachian Farmstead (SAF) living history interpretive site on approximately 20 acres of national forest on Highway 28 in the Chattooga Wild and Scenic River Corridor. The OHC, through the proposed SAF, would interpret historic, rural ways of life associated with Southern Appalachian culture that existed in South Carolina, Georgia and North Carolina from 1875 to 1925. It also would create interpretive exhibits and educational programs at the proposed SAF related to the area's rich Southern Appalachian cultural history.

The Russell Farmstead, located southwest of the Highway 28 bridge in Oconee County, South Carolina (Map 1) was the original site of Chattooga Town, a 17th and 18th century Cherokee village (Schroedl, 1994). William Clark purchased the property from Walter Adair, a half Cherokee, in 1816. In 1819, Clark sold the property to Solomon Palmer who then sold 640 acres to Ira Nicholson in 1828. Nicholson sold the land to William Ganaway Russell in 1867. Russell built a new house, married one of the Nicholson daughters (Jane) in 1870, and had seven children by 1880. The farmstead originally consisted of agricultural fields, gardens, pastures, a large two-story frame house and at least 12 outbuildings. The U.S. Forest Service purchased the 187-acre tract in 1970.

In 1988, the National Park Service (NPS) recognized the farmstead as one of the nation's historic places worthy of preservation and placed five acres of the farmstead, including the original house and outbuildings, on the National Register of Historic Places (National Register or NRHP). Specifically, the NPS recognized the house, outbuildings and the site itself for three areas of significance from 1867 to 1921: transportation, agriculture and architecture. For transportation, the NPS acknowledged the site's role as a stage stop and inn. For agriculture, the NPS recognized the house and outbuildings as representative of the diverse buildings required at small, turn-of-the-century Appalachian farmsteads. For architecture, the NPS considered the main house as a good example of an expansion of the I-house to adapt it to a growing family and commerce related functions. The various outbuildings were found to illustrate common building types and construction techniques used in the region in the 19th and early 20th centuries. The individual outbuildings are significant examples of vernacular architecture; the Park Service cited the remaining buildings as examples of early rural architecture.

Shortly thereafter, fire destroyed the main house, two outbuildings and an outhouse in May, 1988. The loss of these four buildings, in addition to advanced deterioration of the remaining structures over the years, have diminished the historic value and interpretive opportunities at the site. Although the U.S. Forest Service continues to mow portions of the original agricultural fields each year to provide open wildlife habitats, the history, interpretive and recreation aspects of the farmstead continue to deteriorate.

Between 2009 and 2012, the U.S. Forest Service considered a variety of development scenarios for the proposed SAF. In addition, agency professionals assessed the potential environmental impacts of two action alternatives and the no action alternative (current management) on the Chattooga WSR's river values (outstandingly remarkable values (ORVs), free-flow condition and water quality) as required by the Wild and Scenic Rivers Act (WSRA), as well as other biological, physical and social resources. During this assessment, the agency determined the following:

1. A non-significant forest plan amendment would be needed to restore some of the historic farm landscape and agriculture areas and to reestablish livestock pastures and corrals; and,
2. Any new management direction would ensure continued enjoyment of the Chattooga WSR by a variety of recreationists consistent with preserving, protecting and/or enhancing the river's values.

This environmental assessment (EA) provides the results of that analysis, combined with consideration of recent recreation management planning in the adjacent upper segment of the Chattooga River (USFS, 2011). This information will help the agency decide whether (or how) to allow the OHC to develop the proposed SAF.

1.2 Need for the Proposed Action

Congress designated the 57-mile Chattooga River (and its 15,432-acre corridor) as part of the National Wild and Scenic Rivers System in 1974 to preserve the river's free-flowing condition, protect its water quality and protect and enhance, whenever possible, the river's ORVs—biology, geology, recreation, scenery and history. The river's many natural attributes, access and recreation infrastructure provide a variety of recreation opportunities including hiking and backpacking, fishing, swimming and wading, whitewater and scenic boating, hunting, photography and nature study.

The Chattooga River is divided into two segments: the upper segment above the Highway 28 bridge and the lower segment below the Highway 28 bridge. The upper segment is divided into the following four reaches:

Chattooga Cliffs Reach:	Begins at Grimshawes Bridge and ends at Bullpen Bridge;
Ellicott Rock Reach:	Begins at Bullpen Bridge and ends at Burrells Ford Bridge;
Rock Gorge Reach:	Begins at Burrells Ford Bridge and ends at Lick Log Creek; and
Nicholson Fields Reach:	Begins at Lick Log Creek and ends at the Highway 28 Bridge.

The lower segment is divided into the following four sections:

Section I:	Begins at the West Fork of the Chattooga River in Georgia and ends at the main river channel;
Section II:	Begins at the Highway 28 bridge and ends at Earl's Ford;
Section III:	Begins at Earl's Ford and ends at the Highway 76 bridge; and
Section IV:	Begins at the Highway 76 bridge and ends at Lake Tugaloo.

The proposed project area for this analysis includes Section II. Specific need for action statements and relevant laws are summarized below:

A. Action is needed to protect and enhance, whenever possible, the Chattooga WSR's outstandingly remarkable values (ORVs), preserve the river's free-flowing condition and protect its water quality as required by the WSRA and in accordance with the *2004 Revised Land and Resource Management Plan (RLRMP)*, Sumter National Forest.

The national forest lands considered in this proposal are located within the Chattooga WSR Corridor. Congress created the National Wild and Scenic Rivers System in 1968 through the WSRA (P.L. 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural and recreational values in a free-flowing condition for the enjoyment of present and future generations. The act is notable for safeguarding the special character of these rivers, while recognizing the potential for their appropriate use and development. The WSRA requires that the managing agency preserve a designated river's free-flowing condition, protect its water quality and "protect and enhance" its specific outstandingly remarkable values (which are individual for each river). Specifically Congressional declaration of policy states (16 U.S.C. § 1271):

> It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

In addition, the Act addresses public use and management (16 U.S.C. § 1281(a)):

> Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.

Specifically, action is needed to protect and enhance the History ORV by restoring heritage resources at the Russell Farmstead site and educating forest visitors about those resources and their relationship to the river. Interpretive materials would focus on Southern Appalachian history, architecture and agriculture.

The Russell Farmstead is an important historic landmark in Oconee County, with portions of the farm identified on the National Register of Historic Places. However, due to insufficient maintenance since fire destroyed the main house and two outbuildings, the farmstead has been deteriorating. Grasses, weeds, shrubs, trees and vines have grown over what used to be lawns, gardens and pastures. Buildings have been weathering, falling down and vandalized. The proposed action would reverse that trend by stabilizing, restoring and maintaining the buildings and grounds.

Chapter 3 in this EA analyzes the effects of current management, the proposed action and another alternative on the specific ORVs and other values for the Chattooga WSR, providing the underlying basis for decisions and organizing the impact analysis in the document.

The consideration of this application is consistent with and supports the following goals and objectives for the Sumter National Forest as outlined in the *2004 Revised Land and Resource Management Plan, Sumter National Forest* (RLRMP):

> ***Goal 31*** - Manage areas with special paleontological, cultural, or heritage characteristics to maintain or restore those characteristics (RLRMP, page 2-28).
>
> ***Goal 32*** - Meet the demand for quality heritage learning and tourism opportunities. Realize the potential of heritage sites on the national forest to draw heritage tourism partners to benefit both the heritage assets and public programs (RLRMP, page 2-28).
>
> ***Management Prescription 2.A.3, Designated Recreational River Segments, Chattooga River:*** There is evidence of human activity along the shores of these segments of river. There is limited need for visitors to rely on their personal physical abilities and primitive recreational skills within developed and trail areas of these segments. On National Forest system land, visitors enjoy a natural-appearing setting with a range of man-made recreational developments. Since there is the potential for large numbers of visitors at peak-use seasons, regulations may be necessary to protect resources and visitors. Facilities provide visitor safety and comfort and protect the river resources. Facilities may include parking areas, trailheads, bulletin boards, interpretive kiosks, signs, restrooms, canoe/raft launches, fishing platforms, picnic sites, etc. The recreational opportunities are in roaded natural setting. The landscape character is mostly natural appearing and pastoral.

> ***Forest Service Manual - FSM 2364.42*** Conservation and maintenance of cultural resources. The agency official shall meet the Secretary of Interior's Standards for Historic Preservation for National Register eligible or listed properties on National Forest lands.

B. Action is needed to respond to an application from the Oconee Heritage Center for a special use permit to restore the Russell Farmstead and establish a Southern Appalachian Farmstead living history interpretive site.

The Andrew Pickens Ranger District, Sumter National Forest has accepted a special use permit application from the OHC to establish a SAF living history interpretive site located at the Russell Farmstead in the Chattooga WSR Corridor. Under 36 CFR 251.54, the U.S. Forest Service is required to process the OHC's application as follows:

> (2) *Processing applications.* (i) Upon acceptance of an application for a special use authorization other than a planning permit, the authorized officer shall evaluate the proposed use for the requested site, including effects on the environment. The authorized officer may request such additional information as necessary to obtain a full description of the proposed use and its effects.
>
> (ii) Federal, State, and local government agencies and the public shall receive adequate notice and an opportunity to comment upon a special use proposal accepted as a formal application in accordance with Forest Service NEPA procedures.

C. Action is needed to restore and maintain the Russell Farmstead according to National Register of Historic Places standards and guidelines.

> National Register of Historic Places sites should be managed to avoid adverse effects (38CFR800.5) including physical destruction, neglect and deterioration, alteration not consistent with the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68), removal from a historic location, and introduction of visual, atmospheric, or audible elements or changes in property use that diminish historic integrity.

1.3 PROPOSED ACTION

In response to an application from the OHC Board of Directors for a special use permit, the U.S. Forest Service proposes to restore the Russell Farmstead and establish it as an SAF living history interpretive site. Specifically, the proposed action would restore the Russell Farmstead as a functioning farm designed and operated to interpret various aspects of rural Southern Appalachian culture between 1875 and 1925. The restoration would replicate the sights and sounds of this era and encourage visitors to learn about the area's history and relationship to the Chattooga WSR.

The proposed action includes:

1. Restoration of the existing Russell Farmstead structures, some landscapes and historic uses;
2. Relocation of an historic cabin from another site to the new Southern Appalachian Farmstead site that would accommodate interpretive exhibits and education materials, as well as promote heritage and recreation tourism by offering visitors information about recreation opportunities in South Carolina's national forests and the surrounding area;
3. Relocation of an historic cabin from another site to the new Southern Appalachian Farmstead that would be interpreted as a typical Southern Appalachian farmhouse;
4. Construction of a new 30-vehicle gravel parking area for Southern Appalachian Farmstead visitors (in addition to an existing five-vehicle gravel parking area for existing users if possible) and two, modern vault toilets; and
5. Construction of a new, historically accurate replica of a Southern Appalachian home that would serve as the caretaker residence located on the opposite side of Highway 28 from the existing Russell Farmstead.

As a working farm, the proposed SAF would demonstrate and interpret equipment, tools and farming techniques as well as activities from the historic era, such as candle making, growing crops and blacksmithing. Visitors would be able to see and experience life from this era through these demonstrations or related events that may feature Appalachian music, quilting bees, barn raisings, cooking sorghum and farming and lumbering.

The proposal also includes a non-significant amendment to the *2004 Revised Land and Resource Management Plan*, Sumter National Forest to allow restoration of the original farm landscape that included historic gardens, agricultural fields and livestock pastures. The amendment would include project-specific adjustments to remove stream buffers and to remove vegetation that has encroached on the farmstead, gardens and pastures. It would also allow the corralling of livestock and agricultural activities in traditional areas on the landscape.

1.4 Decision to be Made

The decision to be made is specific to the OHC's application for a special use permit. Management activities are considered within the context of the Chattooga WSR.

This EA discloses the environmental effects of two action alternatives and the no-action alternative (current management). Based on a review of this EA, the forest supervisor will decide:

A. Whether to proceed with the proposed action, another action alternative or maintain current management; and
B. Whether the selected alternative will have a significant impact on the quality of the human environment. If the forest supervisor determines that the impact is not significant, then a Finding of No Significant Impact (FONSI) would be prepared and documented in decision notices (Forest Service Handbook 1909.15, 43.2) signed by the forest supervisor. Significant impacts on the quality of the human environment would require the preparation of an Environmental Impact Statement [NEPA, 1501.4 (c) and (e)].

1.5 Public Involvement

The U.S. Forest Service first listed the proposed SAF in the Sumter National Forest's Schedule of Proposed Actions (SOPA) in July 2009. The initial scoping/30-day notice and comment period for this project began July 13, 2009 and ended September 4, 2009. The agency sent a letter to a district mailing list describing the proposed action, the purpose and need and requesting public input on the proposed project from individuals and agencies. In addition, the agency held a public meeting on August 31, 2009 in Walhalla, South Carolina. The U.S. Forest Service considered comments received during scoping when developing alternatives and used them in effects analysis and design criteria.

After the initial scoping/comment period, the OHC changed their permit request, which the U.S. Forest Service accepted. These changes are presented in the proposed action, Alternative 2. As stated previously, agency analysis indicates that a non-significant Forest Plan amendment would be needed to accommodate some aspects of the proposed project.

The U.S. Forest Service will conduct a 30-day notice and comment period before issuing a final decision.

1.6 KEY ISSUES

A U.S. Forest Service interdisciplinary team (ID team) reviewed comments received during the scoping/30 day notice and comment period and categorized them as either key or non-key issues. Issues (cause-effect relationships) serve to highlight effects of unintended consequences that may occur from the proposed action, providing opportunities during the analysis to explore alternative ways to meet the purpose and need for the proposal while reducing adverse effects. The ID Team has addressed key issues by developing and refining specific alternatives (described in Chapter 2). The ID Team and resource specialists used some of the comments to help complete the effects analysis disclosed in Chapter 3 of this EA. A few comments received from the public were outside the scope of the decision to be made or were not relevant.

This section integrates and summarizes the issues; it also addresses how the agency has developed alternatives or how the effects analysis addresses them.

A. Need for permanent residences or structures

Issue: Concern that permanent residences or structures included in the proposal may increase development and surface disturbance at the site, with potential impacts on the river's values, including water quality and ORVs.

Response: Alternative 1 does not include any additional structures while Alternative 3 reduces the number of new structures at the site compared to the proposed action.

In both action alternatives, proposed new structures are not considered permanent. While the OHC desires that the proposed Southern Appalachian Farmstead Proposal extend beyond ten years, the scope of this analysis is limited to a 10-year period. Any extension or renewal of a permit beyond that timeframe would require separate analyses appropriate to the scope and scale at that future time. All structures brought to the site under this permit would be removed should the permit expire.

The EA analyzes potential impacts of increased development within the alternatives on surface disturbance at the site, with potential impacts on the Chattooga WSR's values, including water quality and ORVs.

B. Redundancy of visitor facilities

Issue: Concern that the U.S. Forest Service is duplicating facilities by proposing a new parking lot and vault toilet when these same facilities are at the Highway 28 Boat Launch approximately 0.5 miles south of the Russell Farmstead. These proposed facilities could increase biophysical impacts and add to crowding and congestion along the river.

Response: The parking area and vault toilet at the Highway 28 Boat Launch would not meet the parking, public health or safety sanitation needs of the visitors anticipated for the Southern Appalachian Farmstead. In addition, connecting the Boat Launch parking to the proposed farmstead with a trail is not feasible due to the narrowness and steepness of ground between the river and the highway. Traditional parking (approximately five spaces) would be protected through design criteria for the action alternatives; the balance of the new proposed parking proposed would be designed and managed to accommodate parking by farmstead visitors only. The impacts of these proposed facilities on the biophysical resources, as well as the river's values (including visitor capacities) are analyzed in Chapter 3 of this EA.

C. Effects on use levels in the backcountry of the upper segment of the Chattooga WSR

Issue: Concern that the number of users entering the backcountry in the Nicholson Fields Reach would increase above existing levels if the number of available parking spaces at the Russell Farmstead increases.

Response: Design criteria in alternatives 2 and 3 address this issue.

1.8 Outstandingly Remarkable Values

The WSRA requires federal land managers to protect and enhance the ORVs that merit a river's designation as wild and scenic; the ORVs are individual to each wild and scenic river.

To protect and enhance these values, the WSRA directs managers to prepare a comprehensive management plan (CMP) for each wild and scenic river; for the Chattooga, the U.S. Forest Service has embedded this CMP within three forest plans for the Sumter, Nantahala and Chattahoochee national forests. Collectively, they must address resource protection, development of lands and facilities, user capacity and other management practices necessary or desirable to achieve the WSRA's purposes.

Pursuant to the WSRA, the plan will ensure the river:

> will be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archaeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes or the area.

Similarly, Section 10(a) of the WSRA is interpreted as a "nondegradation and enhancement policy for all designated river areas, regardless of classification" (Wild and Scenic River Interagency Guidelines). Existing uses on federal lands may continue where they do not conflict with river protection. Adverse effects to the ORVs, free-flowing condition and water quality on federal and nonfederal lands must be identified in management proposals a long with mitigation measures to resolve these potential adverse impacts. To achieve a nondegradation standard, the river-administering agency must document baseline resource conditions and monitor changes to these conditions.

The river's ORVs are a foundational element of such a plan. These are the exceptional qualities that merit the river's designation as wild and scenic. In many cases, ORVs are defined when the river is designated, often with direct quotations from a WSR study report. However, for some rivers, including the Chattooga, rivers were designated without explicit discussion of their ORVs, so this became a post-designation administrative task to be conducted in accordance with revised interagency guidelines published in the Federal Register in 1982 (47 FR 9454).

Guidelines suggest ORVs should be river related or river dependent (e.g., located in the river or on its immediate shorelands [generally within one-quarter mile on either side of the river], contribute substantially to the functioning of the river ecosystem and owe its location or existence to the presence of the river). The IWSRCC also suggests that ORVs must be rare, unique or exemplary at a comparative regional or national scale. As expressed by the IWSRCC in 1999, this means that "such a value would be one that is a conspicuous example from among a number of similar values that are themselves uncommon or extraordinary" (IWSRCC, 1999).

This section summarizes the ORVs for the entire Chattooga WSR. These ORVs are largely based on information in the original WSR study report forwarded to Congress in 1971 (USFS, 1971) as well as a more recent formal analysis of the river's ORVs and conditions that the U.S. Forest Service conducted in the mid-1990s (USFS, 1996; hereafter labeled the 1996 ORV Report).

In Chapter 3, these ORVs will be used to structure discussion of the affected environment and the effects analysis. For each ORV, this EA describes baseline conditions as they exist today and at the time of designation. In addition, the effects sections in Chapter 3 describe how the ORVs and related resources would be affected by the alternatives. Other resources not related to specific ORVs are discussed in other sections in Chapter 3.

ORVs are identified by their location in the river corridor if they are found only in a particular area. Direct, indirect and cumulative effects on the ORVs are discussed for each alternative and a determination is made relative to nondegradation and enhancement. Cumulative effects are discussed in the context of the entire Chattooga WSR.

Other considerations in reviewing the ORVs include:

- ORVs may be refined or extended in future reports of planning as more information about the river's resources becomes available. Subsequent generations reserve the right to find other resources in the river corridor valuable.

- Some ORVs are often described at a general level; others are more specific. In general, the protect and enhance mandate applies to ORVs at the river corridor or segment scale, and more specific indicators and standards need to be applied to determine if specific visitor use or impacts are degrading an ORV in a specific area.

- Visitor management decisions related to protecting or enhancing recreation ORVs often involve trade-offs among the types, quantity and quality of recreation opportunities. The recreation ORV for the Chattooga is generally not specific enough to define which opportunities deserve priority. Therefore, alternatives explore different balances among potentially competing or conflicting uses.

- At a larger scale, the U.S. Forest Service is not proposing any new types of recreation activities within the Chattooga WSR Corridor.

- Some ORVs would not be affected by the proposed action or alternatives considered in this EA.

- All ORVs must be protected and, whenever possible, enhanced.

In 1974, when Congress designated the Chattooga WSR, the ORVs included history, geology, biology, scenery and recreation. The following provides a detailed description of the ORVs; additional information is available in the 1971 and 1996 reports.

A. History ORV

Archaeological artifacts indicate human use of the corridor may trace back 12,000 years. More than 15 prehistoric and 15 historic sites have been surveyed, although other known sites have not been systematically examined. The Chattooga Town site has regional significance and contributes to the outstanding historic (heritage) rating for the Chattooga River; it is eligible for the National Register of Historic Places (NRHP). Few other sites apparently qualify. Some of the alternatives in this EA are expected to enhance the History ORV.

B. Geology ORV

Geologic and geomorphological values of the Chattooga WSR include monolithic treeless domes of exposed resistant granite in the upper segment of the river and geomorphic processes that produced the narrow rocky gorges characteristic of the entire corridor. Other noteworthy geologic features include a substantial "river capture" that sends the Chattooga to the Atlantic (most other rivers in the Southern Blue Ridge drain into the Gulf of Mexico). None of the alternatives in this EA are expected to affect the Geology ORV.

C. Biology ORV

The Biology ORV is comprised of three components: botany, wildlife and fisheries. Periodic studies and surveys have been done over the years to better understand the diversity of species and habitats that have been found in the Chattooga WSR Corridor since Congress designated the river.

1. Fisheries

The Chattooga Wild and Scenic River includes both cold water and warm-water fisheries. The cold water fisheries and trout habitat are located above Highway 28 in the upper segment of the Chattooga River; the warm-water fisheries are located in the lower segment. Trout stocking occurs periodically throughout the year and has been done since before Congress designated the river as wild and scenic. The fisheries component of the Biology ORV may be affected by the alternatives and is analyzed in Section 3.2.2A.

2. Wildlife

The Chattooga River watershed has a geology and climate which is unique in the Southern Appalachians; therefore it provides suitable habitats for several wildlife species which are listed as state rare or altogether globally rare. Some of the most important and unique habitat components for rare wildlife species within the watershed

include: exposed rock outcrops; deep, narrow gorges and associated vertical rock walls; steep, exposed, rocky forested slopes; and sheltered riparian corridors. These unique geologic features and habitats provide a full spectrum of important and unique wildlife habitats. In addition, they are mostly associated with the upper portion of the watershed; for this reason, approximately 70% of all rare species known or with potential to occur in the Chattooga River Watershed are restricted to the upper portion of the watershed above the Highway 28 bridge. The species evaluated in this EA include Hellbender, red-breasted nuthatch, bald eagle, cedar waxwing, common raven, golden-crowned kinglet, winter wren, Diane fritillary, Chauga crayfish, Edmund's snaketail and brook floater.

Other species mentioned in the 1996 ORV Report or the habitat they represent are considered critical to the wildlife component of the Biology ORV. The habitat represented includes: large contiguous forest interior; hard mast forest; pine/pine–oak forest; mid–late successional riparian forests; and mid–late successional mesic forests. The species evaluated include black bear, white-tailed deer, ovenbird, pine warbler, Acadian flycatcher, hooded warbler, scarlet tanager and Eastern wild turkey.

The wildlife component of the Biology ORV may be affected by the alternatives and is analyzed in Section 3.2.2B.

3. Botany

The botany component of the Biology ORV is composed of the Southern Appalachian endemics, spray cliff communities and old growth forests. These were considered rare when botanical values were designated. They include liverworts, rock gnome lichen, Blue Ridge bindweed, Fraser's loosestrife, Manhart's sedge, Biltmore's sedge, pink shell azaleas, mountain camellia, Oconee bells and divided leaf ragwort.

Spray cliff plant communities occur on vertical to gently sloping rock faces that are constantly wet from the spray of waterfalls. They are inherently rare and dominated by mosses, liverworts and algae with vascular herbs having substantially less cover. A comprehensive old growth assessment identified 4,578 acres of old growth in the Chattooga River watershed in 1995 (Carlson 1995).

The botany component of the Biology ORV may be affected by the alternatives and is analyzed in Section 3.2.2C

D. Scenery ORV

Scenery in the Chattooga WSR Corridor has remained largely unchanged since the time of designation and features several outstanding views that are regionally exemplary and carefully described in the 1971 study report. In most sections of the river, the deeply entrenched forested gorge between two high ridges is characteristic, along with constantly changing scenes due to meandering bends and frequent rapids, cataracts and falls in the river itself. Seasonal vegetation changes affect the color, texture and character of the scenery, with winter exposing occasional bedrock cliffs.

Some of the alternatives in this EA are expected to affect the Scenery ORV. These effects are analyzed in Section 3.2.3.

E. Recreation ORV

The Chattooga WSR offers a variety of activities along the river's 57-mile course. It offers slow-water opportunities for swimming and fishing (from cold water to warm water habitats)as well as fast water for boating, canoeing and kayaking. Opportunities for hiking, camping, backpacking, wildlife and scenery viewing, horseback riding and hunting all take place in a spectacular setting. Opportunities for solitude, challenge, risk and adventure are found throughout the Chattooga WSR and attract many visitors to the area.

Specific components of the Recreation ORV include:

1. Fishing

Outstanding fishing opportunities for warm- and cold-water species are described in the 1971 and 1996 reports and accounted for the majority of recreation use on the river at the time of designation. Cold and cool water species were noted in the upper river, with warm water species in the lower river. The 1971 study team in particular noted that "trout fishing is excellent in the upper areas [but] marginal in the lower most reaches" and there might be "special interest from a wild river fishery" from Highway 28 north to Bullpen Road Bridge (comprising most of the upper segment of the river).

2. Hiking

Hiking is mentioned in the 1971 report, but only four miles of designated trail (in the upper segment of the river from Burrells Ford to Ellicott Rock) were available at that time, with unofficial trails offering a more rugged hiking opportunity into other areas. In subsequent years, the U.S. Forest Service built more trails.

3. Horseback riding, hunting and motorized use

Horseback riding, hunting and motorized use on several river-adjacent roads were also common and provided recreation, with most of it occurring in the lower segment of the river. All roads except for major highway crossings were removed or converted to trails in the 1970s after designation, making the river appear more remote and less developed. As a trade-off, the river became less accessible to day users, particularly those interested in picnicking or camping near their vehicles.

4. Boating

Boating has occurred on the upper and lower segments of the river, but higher boating use has occurred downstream, even prior to the boating prohibition on the upper river segment in 1976. The original WSR study team travelled the entire river in small rafts, noting in reference to the upper segment of the Chattooga that "some method of

floating is the best way to see this rugged portion of the river." Commercial use has burgeoned on the lower river segment since designation and the access and diversity of whitewater and flat-water trips are also regionally exemplary.

5. Experience

Most of these recreation opportunities depend on primitive or semi-primitive settings with lower use levels, unmodified natural environments that offer a high degree of challenge as well as self-reliance. However, use is higher and more diverse (e.g., fishing, camping, hiking, boating, swimming and relaxing) at some frontcountry locations where development is generally greater also.

Some components of the recreation ORV are expected to be affected by the alternatives in this EA; they are analyzed in Section 3.2.1.

CHAPTER 2 ALTERNATIVES

This section discusses alternatives designed to meet the purpose and need outlined in Chapter 1. Alternatives were developed in response to key issues. Three alternatives are considered in detail in this EA, including current management.

2.1 ALTERNATIVE 1—CURRENT MANAGEMENT

With this alternative, no new management activities related to the Russell Farmstead historic site would occur. Some fields at the historic site would continue to be mowed during the summer months to improve wildlife habitat, but no historic structures or landscape features would be stabilized, restored or otherwise maintained. Other ongoing management activities (e.g., road or trail maintenance, resource monitoring, maintenance of existing interpretive markers) may occur within or adjacent to the proposed project area as part of other river corridor management identified in the RLRMP, but these would not focus on attracting use or providing interpretive opportunities in the area. In general, the site would be allowed to "return to nature" with natural processes likely to increase vegetation in unmowed areas. Such overgrown areas are likely to cause deterioration to remnant structures or other signs of historic human use.

Table 2.1 Alternative 1—Current Management

Buildings/Structures	
Russell Farmstead NRHP site	Remnant foundation allowed to deteriorate.
Relocated historic buildings	None
Caretaker's Residence	None
Public restrooms	None
Parking	Limited informal parking at entrance to Russell Farmstead and across Hwy. 28.
Security	Limited USFS law enforcement (as part of routine corridor patrols)
Landscape	
Historic landscapes	Some fields (about 30 acres) still mowed for wildlife habitat openings
Pesticides	None
Existing stream crossings	Maintain existing culverts and fords of small streams
Ditching or drainage structures	Maintain to prevent water on road surface, stream adjacent to road, wet areas
Existing power line	Maintain current alignment (adjacent to highway 28, with crossing).
Events, Programs and Interpretation	
Public events/programs	None
Interpretation	Limited. Chattooga Town historic marker. Russell Farmstead interpretive sign.
Implementation	
Monitoring	Existing structures would be monitored for safety concerns and possibly stabilized.
Performance bonding	None
Commercial Activities	
Shuttle system	None
Sales	None
Fees	None
Fundraising	None

2.2 Alternative 2—Proposed Action

In this alternative, the proposed action, the Russell Farmstead would be fully developed into a Southern Appalachian Farmstead (SAF) living history interpretive site. The Oconee Heritage Center (OHC) would restore, maintain, use and interpret the existing Russell Farmstead structures, landscapes and historic uses. It would also develop appropriate visitor use facilities (parking area and restrooms) to handle the expected number of visitors. Major features of this alternative include:

1. Relocation of an historic cabin from another site for an interpretive center;
2. Relocation of a second historic cabin from another site to be interpreted as a typical rural Southern Appalachian farmhouse;
3. A new 30-vehicle gravel parking area and two vault toilets; approximately five additional parking spaces would be maintained if possible for traditional users;
4. Construction of a new, replica home to be used as the caretaker residence (on the opposite side of Highway 28); and
5. A new access road from the parking lot to intersect with Highway 28.

This alternative includes a non-significant forest plan amendment to the Revised Land and Resource Management Plan, Sumter National Forest (Forest Plan)(see Appendix D). The amendment would change current Forest Plan management direction to allow for restoration of the original farmstead landscape and associated activities in the approximately 22 acre Southern Appalachian Farmstead (SAF) area only.

Proposed Forest Plan changes would include:

1. Adjusting riparian corridor minimum buffer widths that are consistent with *South Carolina's Best Management Practices* (BMPs) direction. The width would be reduced from 100 feet to 40 feet (horizontal distance on either side of the stream) for perennial streams, seeps, wetlands and ditch lines and from 50 to 40 feet (horizontal distance on either side of the stream) for intermittent streams.
2. Permitting use of saddle, pack or draft animals within the SAF project area.
3. Permitting tethering or corralling of horses or other livestock in the SAF project area but not within 40 feet of stream courses.
4. Removing trees within the SAF project area to improve scenic quality or for restoration of the historic farm landscape. The following measures would apply to tree removal within the riparian corridor of the SAF project area:
    a. Leave approximately 50 square feet of basal area in overstory trees within 40 feet of the perennial streams.
    b. Leave all overstory trees if less than 50 square feet of overstory basal area per acre exists.

Table 2.2 Alternative 2—Proposed Action

Buildings/Structures	
Russell Farmstead NRHP site	Stabilize, restore and maintain existing buildings (main barn, pig farrow, log barn, springhouse, small storage shed, large storage shed, small barn, corncrib, root cellar) on the five-acre site. Construct a replica of the original smokehouse. Development would occur through a phased-in approach as funding is available.
Relocated historic buildings	Two historic cabins would be relocated to the site. One cabin would serve as the primary interpretive center and would include an office and sales area; it would require phone service and electricity. The second cabin would represent a typical, small Appalachian farmhouse and would not have utilities. If the replica smokehouse described for the NRHP site is not feasible, a relocated smokehouse would be considered. Development would occur through a phased-in approach as funding becomes available .
Caretaker's Residence	A new residence would be constructed in the historic, Appalachian-style on opposite side of Hwy. 28, across from the existing Russell Farmstead site. Utilities would include water, septic system, phone and electricity. The caretaker would be an OHC employee, and would reside and work at the site full time.
Public restrooms	Two modern vault toilets would be installed.
Parking	A 30-space gravel parking area would be constructed. Approximately five additional spaces would be maintained if possible for traditional users (hunters, anglers or other historical river users) with the remainder signed for frontcountry use at the historic site. During special events, overflow parking for event visitors would be available at the USFS Hwy. 28 Boat Launch approximately 0.5 miles west of the site. Limited administrative parking would be allowed within the proposed SAF site.
Security	An on-site caretaker would provide primary security for the site, as well as routine USFS law enforcement in the WSR corridor. OHC may install fire detection/security systems as needed.
Other	One sawmill and one sorghum mill/furnace may be constructed (pole sheds).
Landscape	
Historic landscapes	The stagecoach and other roadbeds, fence lines, gardens and agricultural crops would be re-established, as well as pastures with traditional grazing farm animals.
Pesticides	Limited amounts of USFS-approved herbicides would be used during initial land clearing. Household insecticides may be used to protect buildings. Herbicides would be applied in combination with manual cutting methods only during initial clearing activities for more effective removal of vegetation that has grown over historically cleared landscapes. Treated areas would be limited to the historic yard, gardens, pastures/pens and the areas to be cleared for the cabin or cabins and the sorghum mill/furnace (five acres or less) and would not include the parking area, caretaker residence area or agricultural fields where crops would be grown. The herbicide used would be *Accord*® Concentrate or equivalent, an EPA-approved herbicide with the active ingredient glyphosate. This herbicide is labeled for the control of annual and perennial weeds and woody plants in forests, non-crop sites, in and around aquatic sites and in wildlife habitat areas. The application methods would be limited to direct foliar spray (5-8% solution) or cut stem/stump treatments (50% solution) during summer months using a backpack sprayer. Either Cide-kick®, a surfactant, or a common detergent also would be included in the mix to improve effectiveness. The five-acre area would be spot treated as needed (not more than one application per year) during a one-to-five year period. Approximately ten gallons of mix per acre would be applied.
Existing stream crossings	Stream crossings would be replaced with foot bridges as outlined in the design criteria.
Ditching or drainage structures	Additional structures would be added as outlined in the design criteria.
Existing power line	The existing power line would be realigned to the Highway 28 corridor.

Table 2.2 Alternative 2 Proposed Action (continued)

Events, Programs and Interpretation	
Public events/programs	Living history interpretive events and programs could include, but would not be limited to, agriculture, construction, traditional farm practices, historically accurate arts and crafts and transportation. Fundraisers would be permitted on a case-by-case basis.
Interpretation	OHC and USFS would develop interpretive signs, literature and interpretive messages that could include but not be limited to: the biological diversity and ecological significance of the Chattooga River; the history of the Cherokees and Chattooga Town; the local, transportation, cultural and agricultural heritage of Oconee County/Southern Appalachia; the Russell House NRHP site; and, the role of the USFS. The USFS would approve all material.
Implementation	
Monitoring	USFS would monitor all aspects of the proposed project including land clearing, construction, reconstruction, agricultural and commercial activities, maintenance, visitation and impacts to the river's ORVs. Stabilization of buildings would be monitored. Monitoring would assess the extent that SAF parking is used by upper segment of the Chattooga users.
Performance bonding	OHC would provide a performance bond before each historic building or new structure would be moved to the site.
Commercial Activities	
Shuttle system	OHC would be permitted to operate a commercial shuttle to transport visitors from the nearby Highway 28 boat launch parking area to the proposed Southern Appalachian Farmstead .
Sales	OHC would be permitted to sell limited merchandise and Forest Service products.
Fees	OHC would be permitted to charge fees.
Fundraising	Fundraisers or similar events would be permitted on a case-by-case basis.

Alternative 2: Connected Actions

Tree felling and removal
Tree felling and removal would be needed in the constructed parking lot, relocation of the power line right-of-way and restoring the historic landscape (heirloom gardens and clearing pasture areas for farm animals). Typical felling and skidding methods would be used to remove larger trees from the site. Trees would be skidded to a landing via a skid trail using heavy equipment. Logs would be loaded onto trucks from temporary log landings.

Road Reconstruction and Maintenance/Temporary Roads
It is estimated that temporary roads would be needed to accommodate equipment for tree removal, power line relocation and for access to the site for construction and building moving equipment. Temporary roads would be obliterated upon completion of construction and reseeded.

Road reconstruction work would consist of, but not be limited to: laying gravel on road surfaces, replacing culverts, ditch cleaning, removing brush and trees along road rights-of-way, installing or replacing gates, and correcting road safety hazards. Maintenance would consist of spot gravel, road grading, cleaning culverts, light brushing and mowing.

2.3 ALTERNATIVE 3—VARIATION OF ALTERNATIVE 2

This alternative is the same as the proposed action except it would have one less relocated cabin and a reduced level of surface disturbance from other interpretive activities. Similar to Alternative 2, this alternative would restore, maintain, use and interpret the existing Russell Farmstead structures, landscapes and historic uses. It would also develop appropriate visitor use facilities (parking lot and restrooms) to handle the expected number of visitors.

Major features of this alternative include:

1. Relocation of an historic cabin from another site for an interpretive center;
2. A new 30-vehicle gravel parking area and two vault toilets; approximately five additional parking spaces would be maintained if possible for traditional users;
3. Construction of a new, replica home to be used as the caretaker residence (on the opposite side of Highway 28); and
4. A new access road from the parking lot to intersect with Highway 28.

Use of herbicides and other associated connected actions listed in the proposed action apply here as well.

This alternative includes a non-significant forest plan amendment to the Revised Land and Resource Management Plan, Sumter National Forest (Forest Plan)(See Appendix D). The amendment would change current Forest Plan management direction to allow for restoration of the original farmstead landscape and associated activities in the approximately 22 acre Southern Appalachian Farmstead (SAF) area only.

Proposed Forest Plan changes would include:

1. Adjusting riparian corridor minimum buffer widths that are consistent with *South Carolina's Best Management Practices* (BMPs) direction. The width would be reduced from 100 feet to 40 feet (horizontal distance on either side of the stream) for perennial streams, seeps, wetlands and ditch lines and from 50 to 40 feet (horizontal distance on either side of the stream) for intermittent streams.
2. Permitting use of saddle, pack or draft animals within the SAF project area.
3. Permitting tethering or corralling of horses or other livestock in the SAF project area but not within 40 feet of stream courses.
4. Removing trees within the SAF project area to improve scenic quality or for restoration of the historic farm landscape. The following measures would apply to tree removal within the riparian of the SAF project area:
    a. Leave approximately 50 square feet of basal area in overstory trees within 40 feet of the perennial streams.
    b. Leave all overstory trees if less than 50 square feet of overstory basal area per acre exists.

Table 2.3 Alternative 3 Reduced Level of Development Compared to Alternative 2

Buildings/Structures	Same as Alternative 2 except "Relocated historic building"
Russell Farmstead NRHP site	Stabilize, restore and maintain existing buildings (main barn, pig farrow, log barn, springhouse, small storage shed, large storage shed, small barn, corncrib, root cellar) on the five-acre site. Construct a replica of the original smokehouse. Development would occur through a phased-in approach as funding is available.
Relocated historic buildings. (one less cabin than Alternative 2).	One cabin would serve as the primary interpretive center and would include an office and sales area; it would require phone service and electricity. If the replica smokehouse described for the NRHP site is not feasible, a relocated smokehouse would be considered. Development would occur through a phased-in approach as funding becomes available.
Caretaker's Residence	A new residence would be constructed in the historic, Appalachian-style on opposite side of Hwy. 28, across from the existing Russell Farmstead site. Utilities would include water, septic system, phone and electricity. The caretaker would be an OHC employee, and would reside and work at the site full time.
Public restrooms	Two modern vault toilets would be installed.
Parking	A 30-space gravel parking area would be constructed. Approximately five additional spaces would be maintained, if possible, for traditional users (hunters, anglers or other historical river users) with the remainder signed for frontcountry use at the historic site. During special events, overflow parking for event visitors would be available at the USFS Hwy. 28 Boat Launch approximately 0.5 miles west of the site. Limited administrative parking would be allowed within the proposed SAF site.
Security	An on-site caretaker would provide primary security for the site, as well as routine USFS law enforcement in the WSR corridor. OHC may install fire detection/security systems as needed.
Other	One sawmill and one sorghum mill/furnace may be constructed (pole sheds).
Landscape	Same as Alternative 2
Historic landscapes	The stagecoach and other roadbeds, fence lines, gardens and agricultural crops would be re-established, as well as pastures with traditional grazing farm animals.
Pesticides	Limited amounts of USFS-approved herbicides would be used during initial land clearing. Household insecticides may be used to protect buildings. Herbicides would be applied in combination with manual cutting methods only during initial clearing activities for more effective removal of vegetation that has grown over historically cleared landscapes. Treated areas would be limited to the historic yard, gardens, pastures/pens and the areas to be cleared for the cabin or cabins and the sorghum mill/furnace (five acres or less) and would not include the parking area, caretaker residence area or agricultural fields where crops would be grown. The herbicide used would be *Accord*® Concentrate or equivalent, an EPA-approved herbicide with the active ingredient glyphosate. This herbicide is labeled for the control of annual and perennial weeds and woody plants in forests, non-crop sites, in and around aquatic sites and in wildlife habitat areas. The application methods would be limited to direct foliar spray (5-8% solution) or cut stem/stump treatments (50% solution) during summer months using a backpack sprayer. Either Cide-kick®, a surfactant, or a common detergent also would be included in the mix to improve effectiveness. The five-acre area would be spot treated as needed (not more than one application per year) during a one-to-five year period. Approximately ten gallons of mix per acre would be applied.
Existing stream crossings	Stream crossings would be replaced with foot bridges as outlined in the design criteria.
Ditching or drainage structures	Additional structures would be added as outlined in the design criteria.
Existing power line	The existing power line would be realigned to the Highway 28 corridor.

Table 2.3 Alternative 3—Reduced Level of Development Compared to Alternative 2 (continued)

Events, Programs and Interpretation	Same as Alternative 2
Public events/programs	Living history interpretive events and programs could include, but would not be limited to, agriculture, construction, traditional farm practices, historically accurate arts and crafts and transportation. Fundraisers would be permitted on a case-by-case basis.
Interpretation	OHC and USFS would develop interpretive signs, literature and interpretive messages that could include but not be limited to: the biological diversity and ecological significance of the Chattooga River; the history of the Cherokees and Chattooga Town; the local, transportation, cultural and agricultural heritage of Oconee County/Southern Appalachia; the Russell House NRHP site; and, the role of the USFS. The USFS would approve all material.
Implementation	Same as Alternative 2
Monitoring	USFS would monitor all aspects of the proposed project including land clearing, construction, reconstruction, agricultural and commercial activities, maintenance, visitation and impacts to the river's ORVs. Stabilization of buildings would be monitored. Monitoring would assess the extent that SAF parking is used by upper segment of the Chattooga users.
Performance bonding	OHC would provide a performance bond before each historic building or new structure would be moved to the site.
Commercial Activities	Same as Alternative 2
Shuttle system	OHC would be permitted to operate a commercial shuttle to transport visitors from the nearby Highway 28 boat launch parking area to the proposed Southern Appalachian Farmstead .
Sales	OHC would be permitted to sell limited merchandise and Forest Service products.
Fees	OHC would be permitted to charge fees.
Fundraising	Fundraisers or similar events would be permitted on a case-by-case basis.

Alternative 3: Connected Actions (same as Alternative 2)

Tree felling and removal

Tree felling and removal would be needed in the constructed parking lot, relocation of the power line right-of-way and restoring the historic landscape (heirloom gardens and clearing pasture areas for farm animals). Typical felling and skidding methods would be used to remove larger trees from the site. Trees would be skidded to a landing via a skid trail using heavy equipment. Logs would be loaded onto trucks from temporary log landings.

Road Reconstruction and Maintenance/Temporary Roads

It is estimated that temporary roads would be needed to accommodate equipment for tree removal, power line relocation and for access to the site for construction and building moving equipment. Temporary roads would be obliterated upon completion of construction and reseeded.

Road reconstruction work would consist of, but not be limited to: laying gravel on road surfaces, replacing culverts, ditch cleaning, removing brush and trees along road rights-of-way, installing or replacing gates, and correcting road safety hazards. Maintenance would consist of spot gravel, road grading, cleaning culverts, light brushing and mowing.

2.4 DESIGN CRITERIA

Design criteria that apply to the action alternatives are found in forest-wide standards and guidelines in the *2004 Revised Land and Resource Management Plan,* Sumter National Forest and South Carolina Forestry Commission's Best Management Practices (SCFC, 1994).
The following design criteria apply to alternatives 2 and 3 and would be incorporated into the special use permit to Oconee Heritage Center:

1) All federal and state permits and easements would be obtained by the permittee prior to the commencement of any site-disturbing activities. This would include but not be limited to National Pollutant Discharge Elimination System (NPDES) storm water permits and South Carolina Department of Transportation encroachment permit.
2) Hazard areas would be identified and closed to the public such as during felling of trees, operation of heavy equipment and construction/reconstruction/maintenance of buildings and roads.
3) All buildings and modern vault toilets would be located outside of the Chattooga River floodplain (Zone A) as identified on Federal Emergency Management Agency (FEMA) maps.
4) Ground-disturbing activities associated with tree removal, road reconstruction and farm agriculture would be reviewed for effects to cultural resources. Adverse effects to historic properties would be avoided.
5) A historic properties management plan with the South Carolina State Historic Preservation Office would address effects on the Russell House Site related to the restoration of historic buildings.
6) Any new culverts and culvert replacements would allow for aquatic organism passage where deemed appropriate.
7) Erosion and sediment control practices, including but not limited to erosion control fencing, would be used to reduce sediment input to streams during construction and reconstruction activities.
8) No ground-disturbing activities would be permitted within 200 feet of the Chattooga River with the possible exception of a portion of the parking area.
9) Approximately 50 square feet of basal area in overstory trees would be retained within the primary stream-side management zone (40 feet). Leave all trees if less than 50 square feet of overstory basal area per acre exists. The intent is to maintain sufficient overstory and understory cover to provide shade, maintain bank stability and protect water quality. Pastures holding livestock for extended periods of time would be located outside the 100 foot riparian buffer zones of streams.
10) Areas regularly cultivated would be on slopes of four percent or less to limit erosion and sediment input to streams. Contour plowing; leaving vegetated strips and other stabilization measures would be used to reduce erosion and sediment input to streams on areas that are over four percent.
11) Tillage of soils in the crop fields would be limited to periods of minimal rainfall to minimize soil runoff.
12) Bare areas that are subject to erosion would be seeded and mulched to minimize erosion. Use of herbicides would be limited to periods of minimal rainfall to avoid runoff and would not occur within 100 feet of seeps, springs, streams or 200 feet of the river.

13) Only herbicides labeled for aquatic use would be used.
14) No more than four stream crossings (stagecoach road and crop field access) would be constructed. These crossings would be installed to limit sediment input during construction and use.
15) Temporary stream crossings and spot placement of gravel on road surfaces would be required during all initial construction activities and set-up of buildings to protect the road surface and to minimize soil erosion and sediment input to streams.
16) Any ditching or drainage structures associated with the stream would be reviewed by the Forest aquatic biologist, hydrologist and soil scientist prior to any disturbance.
17) Drainage structures would be used to reduce concentrated water flow from roads and trails and disperse it into forested areas.
18) Existing springs or seeps would not be altered. No wet concrete would be used in the restoration of the springhouse.
19) The water well and septic system at the caretaker's residence would meet state and county code requirements.
20) Fencing in the form of pens and corrals would be used to keep livestock out of streams, ditches, seep areas and the river.
21) Water sources for livestock would be approved by the Andrew Pickens Ranger District Ranger with consultation from the Forest aquatic biologist and hydrologist.
22) Equipment used in association with this project would be subject to equipment cleaning provisions to prevent the introduction and spread of non-native invasive plants into the area. Materials used for erosion control would minimize the potential for introduction of non-native invasive species into the area.
23) If possible, the parking lot to be constructed would reserve up to five parking spaces for recreation users not associated with activities at the farmstead. The remaining parking spaces would be reserved for visitors to the farmstead. Access to this portion of the parking lot would be controlled by a gate.
24) Removal of power poles in the Chattooga River floodplain would only occur during dry conditions and with minimal soil disturbance by equipment.
25) The power line corridor within the Chattooga River floodplain would be allowed to revegetate and function as a riparian corridor once the power poles are removed.

2.5 MONITORING

Monitoring helps the agency determine whether management actions for the selected alternative are being implemented consistent with the decision and whether those actions are resulting in the desired outcomes described in the Purpose and Need. Monitoring would also help determine specifically whether the ORVs are being protected and/or enhanced.

A. Indirect Impacts to Upper River Segment Uses

As noted in Chapter 3, one concern about the proposed action is whether additional opportunities for visitation at the Southern Appalachian Farmstead, and the additional parking to accommodate that use, would cause an increased number of visitors in the Upper Segment of the Chattooga Wild and Scenic River Corridor above the Highway 28 Bridge (Upper River). The *Environmental Assessment for Managing Recreation Uses in the Upper Segment of the*

Chattooga Wild and Scenic River Corridor (January, 2012) considered the traditional users associated with five informal roadside "parking spaces" in the vicinity of the Russell Farmstead that were considered during the Use Estimation Workshop. The data from that workshop was then used to develop capacities for the Nicholson Fields Reach. Therefore, staff from the Oconee Heritage Center in partnership with the agency would monitor parking at the SAF to determine whether visitors associated with more than five vehicles are entering the Upper Segment of the Chattooga WSR Corridor.

Management techniques to prevent users from affecting established capacities in the Nicholson Fields Reach would include site management, indirect regulation of use and direct regulation of use (FSM 2354.41a). Actions could include but are not limited to designing the parking lot with a gate that could be closed, information signs and time-limited parking spots for SAF visitors. These actions would provide continued access for traditional users in the five parking spots, accommodate casual visitors to the farmstead and ensure capacities in the Nicholson Fields Reach are maintained.

B. Outstandingly Remarkable Values

The monitoring described in all alternatives would assess whether existing or new uses are protecting and/or enhancing the Outstandingly Remarkable Values described in Chapter 3. Monitoring would be done through the techniques described in Section A above, as well as through regular Forest Plan monitoring which is documented in the annual monitoring report.

C. National Register of Historic Places

The monitoring described in all alternatives would assess whether existing or new uses are causing adverse effects to the property on the National Register of Historic Places, including physical destruction, neglect and deterioration, alteration not consistent with the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68), removal from a historic location, or introduction of visual, atmospheric, or audible elements or changes in property use that diminish historic integrity. U.S. Forest Service archeologists would coordinate with National Park Service authorities and the State Historic Preservation Officer in the development and application of monitoring strategies.

2.5 Comparison of Alternatives

Table 2.5-1 Comparison of Alternative Components

Alternative	1 Current Management	2 Proposed Action	3 Slight Variation of Alternative 2
Buildings/Structures			
Russell Farmstead NRHP site	Remnant foundation allowed to deteriorate	Stabilize, restore and maintain existing buildings (main barn, pig farrow, log barn, springhouse, small storage shed, large storage shed, small barn, corncrib, root cellar) on the five-acre site. Construct a replica of the original smokehouse. Development would occur through a phased-in approach as funding is available.	Same as Alternative 2
Relocated historic buildings	None	Two historic cabins would be relocated to the site. One cabin would serve as the primary interpretive center and would include an office and sales area; it would require phone service and electricity. The second cabin would represent a typical, small Appalachian farmhouse and would not have utilities. If the replica smokehouse described for the NRHP site is not feasible, a relocated smokehouse would be considered. Development would occur through a phased-in approach as funding becomes available .	One less cabin than Alternative 2. One cabin would serve as the primary interpretive center and would include an office and sales area; it would require phone service and electricity. If the replica smokehouse described for the NRHP site is not feasible, a relocated smokehouse would be considered. Development would occur through a phased-in approach as funding becomes available.
Caretaker's Residence	None	A new residence would be constructed in the historic, Appalachian-style on opposite side of Hwy. 28, across from the existing Russell Farmstead site. Utilities would include water, septic system, phone and electricity. The caretaker would be an OHC employee, and would reside and work at the site full time.	Same as Alternative 2
Public restrooms	None	Two modern vault toilets would be installed.	Same as Alternative 2
Parking	Limited informal parking at entrance to Russell Farmstead and across Hwy. 28.	A 30-space gravel parking area would be constructed. Approximately five additional spaces would be maintained, if possible, for traditional users (hunters, anglers or other historical river users) with the remainder signed for frontcountry use at the historic site. During special events, overflow parking for event visitors would be available at the USFS Hwy. 28 Boat Launch approximately 0.5 miles west of the site. Limited administrative parking would be allowed within the proposed SAF site.	Same as Alternative 2
Security	Limited USFS law enforcement (as part of routine corridor patrols)	An on-site caretaker would provide primary security for the site, as well as routine USFS law enforcement in the WSR corridor. OHC may install fire detection/security systems as needed.	Same as Alternative 2
Other	None	One sawmill and one sorghum mill/furnace may be constructed (pole sheds).	Same as Alternative 2

Table 2.5-1 Comparison of Alternative Components (continued)

Landscape			
Historic landscapes	Some fields (about 30 acres) still mowed for wildlife habitat openings	The stagecoach and other roadbeds, fence lines, gardens and agricultural crops would be re-established, as well as pastures with traditional grazing farm animals.	Same as Alternative 2
Pesticides	None	Limited amounts of USFS-approved herbicides would be used during initial land clearing. Household insecticides may be used to protect buildings. Herbicides would be applied in combination with manual cutting methods only during initial clearing activities for more effective removal of vegetation that has grown over historically cleared landscapes. Treated areas would be limited to the historic yard, gardens, pastures/pens and the areas to be cleared for the cabin or cabins and the sorghum mill/furnace (five acres or less) and would not include the parking area, caretaker residence area or agricultural fields where crops would be grown. The herbicide used would be *Accord*® Concentrate or equivalent, an EPA-approved herbicide with the active ingredient glyphosate. This herbicide is labeled for the control of annual and perennial weeds and woody plants in forests, non-crop sites, in and around aquatic sites and in wildlife habitat areas. The application methods would be limited to direct foliar spray (5-8% solution) or cut stem/stump treatments (50% solution) during summer months using a backpack sprayer. Either Cide-kick®, a surfactant, or a common detergent also would be included in the mix to improve effectiveness. The five-acre area would be spot treated as needed (not more than one application per year) during a one-to-five year period. Approximately ten gallons of mix per acre would be applied.	Same as Alternative 2
Existing stream crossings	Maintain existing culverts and fords of small streams	Stream crossings would be replaced with foot bridges as outlined in the design criteria.	Same as Alternative 2
Ditching or drainage structures	Maintain to prevent water on road surface, stream adjacent to road, wet areas	Additional structures would be added as outlined in the design criteria.	Same as Alternative 2
Existing power line	Maintain current alignment (adjacent to highway 28, with crossing).	The existing power line would be realigned to the Highway 28 corridor.	Same as Alternative 2
Events, Programs and Interpretation			
Public events/programs	None	Living history interpretive events and programs could include, but would not be limited to, agriculture, construction, traditional farm practices, historically accurate arts and crafts and transportation. Fundraisers would be permitted on a case-by-case basis.	Same as Alternative 2
Interpretation	Limited. Chattooga Town historic marker. Russell Farmstead interpretive sign.	OHC and USFS would develop interpretive signs, literature and interpretive messages that could include but not be limited to: the biological diversity and ecological significance of the Chattooga River; the history of the Cherokees and Chattooga Town; the local, transportation, cultural and agricultural heritage of Oconee County/Southern Appalachia; the Russell House NRHP site; and, the role of the USFS. The USFS would approve all material.	Same as Alternative 2

Table 2.5-1 Comparison of Alternative Components (continued)

Implementation			
Monitoring	Existing structures would be monitored for safety concerns and possibly stabilized.	USFS would monitor all aspects of the proposed project including land clearing, construction, reconstruction, agricultural and commercial activities, maintenance, visitation and impacts to the river's ORVs. Stabilization of buildings would be monitored. Monitoring would assess the extent that SAF parking is used by upper segment of the Chattooga users	Same as Alternative 2
Performance bonding	None	OHC would provide a performance bond before each historic building or new structure would be moved to the site.	Same as Alternative 2
Commercial Activities			
Shuttle system	None	OHC would be permitted to operate a commercial shuttle to transport visitors from the nearby Highway 28 boat launch parking area to the proposed Southern Appalachian Farmstead.	Same as Alternative 2
Sales	None	OHC would be permitted to sell limited merchandise and Forest Service products.	Same as Alternative 2
Fees	None	OHC would be permitted to charge fees.	Same as Alternative 2
Fundraising	None	Fundraisers or similar events would be permitted on a case-by-case basis.	Same as Alternative 2
Connected Actions			
Tree Felling and Removal	None	Tree felling and removal would be needed in the constructed parking lot, relocation of the power line right-of-way and restoring the historic landscape (heirloom gardens and clearing pasture areas for farm animals). Typical felling and skidding methods would be used to remove larger trees from the site. Trees would be skidded to a landing via a skid trail using heavy equipment. Logs would be loaded onto trucks from temporary log landings.	Same as Alternative 2.
Road Reconstruction and Maintenance/ Temporary Roads	None	It is estimated that temporary roads would be needed to accommodate equipment for tree removal, power line relocation and for access to the site for construction and building moving equipment. Temporary roads would be obliterated upon completion of construction and reseeded. Road reconstruction work would consist of, but not be limited to: laying gravel on road surfaces, replacing culverts, ditch cleaning, removing brush and trees along road rights-of-way, installing or replacing gates, and correcting road safety hazards. Maintenance would consist of spot gravel, road grading, cleaning culverts, light brushing and mowing.	Same as Alternative 2.
Design Criteria			
Federal/state permits and easements	None	All federal and state permits and easements would be obtained by the permittee prior to the commencement of any site-disturbing activities. This would include but not be limited to National Pollutant Discharge Elimination System (NPDES) storm water permits and South Carolina Department of Transportation encroachment permit.	Same as Alternative 2.
Hazard areas	None	Hazard areas would be identified and closed to the public such as during felling of trees, operation of heavy equipment and construction/reconstruction/maintenance of buildings and roads.	Same as Alternative 2.
Vault toilet locations	None	All buildings and modern vault toilets would be located outside of the Chattooga River floodplain (Zone A) as identified on Federal Emergency Management Agency (FEMA) maps.	Same as Alternative 2.
Effects to cultural resources/historic properties	None	Ground-disturbing activities associated with tree removal, road reconstruction and farm agriculture would be reviewed for effects to cultural resources. Adverse effects to historic properties would be avoided.	Same as Alternative 2.
Historic properties management plan	None	A historic properties management plan with the South Carolina State Historic Preservation Office would address effects on the Russell House Site related to the restoration of historic buildings.	Same as Alternative 2.

Table 2.5-1 Comparison of Alternative Components (continued)

Design Criteria (cont.)			
Aquatic organism passage	None	Any new culverts and culvert replacements would allow for aquatic organism passage where deemed appropriate.	Same as Alternative 2.
Erosion and sediment control practices	None	Erosion and sediment control practices, including but not limited to erosion control fencing, would be used to reduce sediment input to streams during construction and reconstruction activities.	Same as Alternative 2.
Ground-disturbing activities	None	No ground-disturbing activities would be permitted within 200 feet of the Chattooga River with the possible exception of a portion of the parking area.	Same as Alternative 2.
Overstory trees/basal area requirements	None	Approximately 50 square feet of basal area in overstory trees would be retained within the primary stream-side management zone (40 feet). Leave all trees if less than 50 square feet of overstory basal area per acre exists. The intent is to maintain sufficient overstory and understory cover to provide shade, maintain bank stability and protect water quality. Pastures holding livestock for extended periods of time would be located outside the 100 foot riparian buffer zones of streams.	Same as Alternative 2.
Slope requirements/stabilization measures	None	Areas regularly cultivated would be on slopes of four percent or less to limit erosion and sediment input to streams. Contour plowing; leaving vegetated strips and other stabilization measures would be used to reduce erosion and sediment input to streams on areas that are over four percent.	Same as Alternative 2.
Soil tillage	None	Tillage of soils in the crop fields would be limited to periods of minimal rainfall to minimize soil runoff.	Same as Alternative 2.
Minimizing erosion	None	Bare areas that are subject to erosion would be seeded and mulched to minimize erosion. Use of herbicides would be limited to periods of minimal rainfall to avoid runoff and would not occur within 100 feet of seeps, springs, streams or 200 feet of the river.	Same as Alternative 2.
Herbicides	None	Only herbicides labeled for aquatic use would be used.	Same as Alternative 2.
Stream crossing requirements	None	No more than four stream crossings (stagecoach road and crop field access) would be constructed. These crossings would be installed to limit sediment input during construction and use.	Same as Alternative 2.
Temporary stream crossings	None	Temporary stream crossings and spot placement of gravel on road surfaces would be required during all initial construction activities and set-up of buildings to protect the road surface and to minimize soil erosion and sediment input to streams.	Same as Alternative 2.
Ditching or draining structures	None	Any ditching or drainage structures associated with the stream would be reviewed by the Forest aquatic biologist, hydrologist and soil scientist prior to any disturbance.	Same as Alternative 2.
Drainage structures	None	Drainage structures would be used to reduce concentrated water flow from roads and trails and disperse it into forested areas	Same as Alternative 2.
Existing streams or structures	None	Existing springs or seeps would not be altered. No wet concrete would be used in the restoration of the springhouse	Same as Alternative 2.
Water well/septic system	None	The water well and septic system at the caretaker's residence would meet state and county code requirements.	Same as Alternative 2.
Fencing	None	Fencing in the form of pens and corrals would be used to keep livestock out of streams, ditches, seep areas and the river.	Same as Alternative 2.
Water sources for live stock	None	Water sources for livestock would be approved by the Andrew Pickens Ranger District Ranger with consultation from the Forest aquatic biologist and hydrologist.	Same as Alternative 2.
Equipment cleaning provisions and materials for erosion control.	None	Equipment used in association with this project would be subject to equipment cleaning provisions to prevent the introduction and spread of non-native invasive plants into the area. Materials used for erosion control would minimize the potential for introduction of non-native invasive species into the area.	Same as Alternative 2.

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes existing environmental conditions (affected environment) for resources potentially affected by the alternatives described in Chapter 2. Potential impacts to the following are identified, described and evaluated for current management (Alternative 1) and the action alternatives 2 and 3:

- 3.2 The Chattooga Wild and Scenic River's Outstandingly Remarkable Values
  - 3.2.1 Recreation
  - 3.2.2 Biology ORV (Fisheries, Wildlife and Botany Components)
  - 3.2.3 Scenery
  - 3.2.4 History
  - 3.2.5 Geology
- 3.3 Other River Values
  - 3.3.1 Free-flowing Condition
  - 3.3.2 Water Quality
- 3.4 Other Physical Resources
  - 3.4.1 Soils
  - 3.4.2 Wetlands, Floodplains and Riparian Corridors
  - 3.4.3 Air
  - 3.4.4 Climate Change
- 3.5 Other Biological Resources—Vegetation
- 3.6 Other Social Resources
  - 3.6.1 Human Health and Safety
  - 3.6.2 Social Impact Analysis
  - 3.6.3 Economics

The environmental consequences disclose the direct, indirect and cumulative effects of implementing each of the alternatives. For the cumulative effects analysis, the list of past, present and reasonably foreseeable activities in the following table, Table 3.1-1, were considered.

Table 3.6.2-3 Past, Present and Reasonably Foreseeable Activities in the Vicinity of the Proposed Southern Appalachian Farmstead Project Area

Activity	Year Implemented	Acres/Miles Affected	Past	Present	Future
Periodic mowing of wildlife opening, access road and around the Russell Farmstead	ongoing	5-6 acres	X	X	X
Periodic treatment of non-native invasive species with herbicide	ongoing	Spot treatments of small populations[1]	X	X	X
Periodic prescribed burning with associated fireline	2012	30-acre, wet fireline and/or shallow disk fireline approximately 1.1 mile	-	x[2]	X
Giant cane restoration	2012	29 acres	-	-	X
Highway 28 road maintenance (SC Dept. of Transportation mowing and tree trimming)	ongoing	2 acres	X	X	X
Power line maintenance	ongoing	0.8 acres[3]	X	X	X
Use of upper Russell Field as helispot for annual fish stocking – helicopter and road use	ongoing	<0.1 acre	X	X	X
Highway 28 bridge replacement (GA Dept. of Transportation)	2015-2020	Estimated at 5 acres	-	-	X
Outfitter/Guide Special-Use Permits/Renewals	2012	Includes Chattooga River	X	X	X

[1] Exception: In 2009 a two-acre stand of bamboo was cut and treated with herbicide.
[2] Approximately two acres were burned in FY 2011.
[3] maintenance includes current manual and mechanical methods plus reasonable addition of herbicide in future.

3.2 OUTSTANDINGLY REMARKABLE VALUES

3.2.1 RECREATION ORV

I. SUMMARY OF FINDINGS

The Chattooga Wild and Scenic River (WSR) offers diverse recreation opportunities along its 57-mile course, with fishing, boating and hiking among the more popular activities Although historic features do not appear to be a focus of most recreation trips to the Chattooga WSR, some visitors benefit from the area's rich History Outstandingly Remarkable Value (ORV), and may include visits to historic structures such as the Russell Farmstead.

At the time of WSR designation, most of the river appeared to provide an undeveloped setting for primitive or semi-primitive recreation, with low use levels and unmodified natural environments that offered a high degree of challenge and self-reliance. However, the river corridor near Highway 28 provided a less primitive and more rural setting, including a road along the river and "flat bottomlands" that were farmed by the families that settled the area.

In 1996, the U.S. Forest Service issued a report on the river's ORVs that documented few changes to those ORVs since designation, but noted some changes in recreation opportunities and management. For the entire river, some road-accessible access was reduced, although recreation facilities and more hiking trails were developed elsewhere. In addition, both commercial and private boating use increased dramatically on the lower river, while fishing and hiking increased on the upper river. Management changes included a boating prohibition on the upper river, commercial and private limits on various sections of the lower river, and trout stocking and regulations that created a fall-spring "delayed harvest" (DH/catch and release) season on a reach upstream from Highway 28.

Current recreation use near the Russell Farmstead has remained relatively low. Anglers may use this area more during the summer and DH season, but use rarely exceeds a few parties at one time. Boating use near the Russell Farmstead (in Section II of the lower segment of the Chattooga WSR) has been as high as 800 trips and 4,500 people per year in the mid-1990s. However, in recent years, boating use in Section II has been less than 3,000 people per year, which is much lower than on other sections where nearly 60,000 people may boat each year. Other recreation activities in Section II include swimming, hiking, relaxing, picnicking and hunting at accessible frontcountry[4] locations along Highway 28.

[4] Frontcountry is defined in Amendment 1 of the 2004 Sumter RLRMP as "An area that lies within one-quarter mile of identified roads and bridges. These areas offer easy access to the national forest where visitors are more tolerant of interaction with others as long as at-one-time use does not overwhelm the natural setting or create high levels of crowding and congestion."

The Russell Farmstead and the proposed Southern Appalachian Farmstead are located in a section of the river classified as "Recreational." This classification, made at designation, means this section of the river is, "readily accessible by road, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past." Section 2.A.3 of the 2004 Sumter RLRMP defines a specific desired condition for "Designated Recreation River Segments, Chattooga River" using one of six different "Recreation Opportunity Spectrum" (ROS) classes that range from "primitive" to "urban." Under this system, the existing Russell Farmstead/proposed SAF sites fit in the Roaded Natural category.

Recreation trends suggest backcountry use in the corridor near the proposed SAF site is likely to increase slightly over the life of this plan, and frontcountry use is likely to increase at a slightly higher rate. These trends may affect impacts under existing management and the two "action alternatives" that would introduce more use and development into the proposed SAF area.
The current Revised Land and Resource Management Plan, Sumter National Forest as amended (Forest Plan) includes capacities for commercial and private boating use. The commercial use limits vary by section, season, weekends/weekdays and flows. In addition, the Forest Plan established capacities for several frontcountry areas and backcountry reaches for all uses. These capacities include consideration of use that may originate from existing informal parking areas near the proposed SAF site.

Traditional hunters, anglers and occasional history enthusiasts may visit the Russell Farmstead area and are likely to value solitude; however, little evidence indicates that their experiences are being adversely affected by current development or visitation from other users. They generally seek and experience a Recreational/Roaded Natural setting.

Anglers and boaters who use the river behind the farmstead are likewise able to achieve their desired experiences. It is not possible to see the existing structures at most water levels due to the high bank and riparian vegetation; in addition, encounters with other users remain low.

Traditional users (anglers and hunters) and occasional history enthusiasts appear to park vehicles at informal pull-outs or parking areas at the Farmstead, creating some biophysical impacts in the area. Impact patterns suggest as many as 15 "unendorsed" parking spaces have been used in recent years, although anecdotal counts suggest "at-one-time" use is unlikely to exceed five vehicles. These impacted sites may reduce a sense of naturalness at the site or along the road, diminishing scenery for driving tourists or those who stop to recreate in the area.

Traditional users have also developed user-created trails through the Farmstead to fishing and hunting areas. Although these trails provide access, they may also diminish a sense of naturalness because some have poor drainage and use has created excessive erosion.

Alternative 1 would not substantially change existing uses and recreation opportunities, offering Roaded Natural and Recreation opportunities at the existing site. However, the existing Russell Farmstead structures would become more dilapidated over time. This might affect future interpretive opportunities for history enthusiasts; no new structures would be developed to create a living history interpretive site.

Opportunities for traditional recreation (fishing and hunting) and historical interpretation would continue; use would remain low enough to protect all recreation opportunities that occur in the area. No new development is likely to attract additional use to the area and threaten capacities on Section II of the lower river segment or the Highway 28 Bridge Area or the Nicholson Fields Reach on the upper river segment. As outlined in the Forest Plan, the overall Recreation ORV would continue to be protected.

Alternative 2 would have minor effects on traditional uses and ***recreation opportunities***. Opportunities for traditional (fishing and hunting) recreation and historical interpretation would continue; traditional use would remain low enough to protect all recreation opportunities that occur in the area. However, new development (primarily two relocated or restored buildings at the site, and a caretaker cabin across the highway) would likely attract additional history-based use to the area, which may displace some traditional users (particularly hunters), especially during the initial construction phase.

Design criteria that specifically separates history-based use from traditional uses would ensure that additional parking capacity at the proposed SAF (30 for history enthusiasts and, if possible, up to five for traditional uses) would not cause ***capacities*** to be exceeded at the proposed SAF, in the Highway 28 Bridge Area or in the Nicholson Fields Reach of the upper segment of the Chattooga WSR.

Sustainable trails to manage pedestrian traffic would be established at the site to reduce potential erosion impacts or handle drainage problems. This would increase the sense of naturalness as the site. The Recreational/Roaded Natural setting would not be affected.

Overall, the Recreation ORV would remain protected under Alternative 2.

Alternative 3 has the same effects as Alternative 2, although only one relocated cabin instead of two would be developed to provide interpretive opportunities and related commercial services at the site. As with improvements to existing structures, these would become slightly more visible to floaters, and would displace anglers and hunters during construction/relocation phases, but to a slightly lesser degree than two new cabins (as in Alternative 2). Overall, the Recreation ORV would continue to be protected.

II. Affected Environment

The Chattooga Wild and Scenic River (WSR) offers diverse recreation opportunities along the river's 57-mile course. In-water activities range from swimming and fishing to rafting, canoeing and kayaking, while land-based activities such as hiking, camping, backpacking, wildlife and scenic viewing, horseback riding and hunting occur in uplands in the corridor. All visitors to the river corridor benefit from the area's spectacular scenery and biological resources, and many find opportunities for solitude, challenge, risk and adventure. Although historic features do not appear to be a specific focus of most recreation trips to the Chattooga WSR, some visitors benefit from the area's rich History ORV, some of which are represented through remnant historic structures (e.g., Russell Farmstead) and existing interpretive information about them.

Specific components of the Recreation ORV for the entire river are described in Chapter 1. The agency developed these components from information in the original Wild and Scenic River Study Report forwarded to Congress in 1971 (USFS, 1971), as well as a more recent formal U.S. Forest Service analysis of the river's ORVs and conditions in the mid-1990s (USFS, 1996; hereafter labeled the 1996 ORV Report). These same components were also outlined recently in the 2012 Environment Assessment *Managing Recreation Uses in the Upper Segment of the Chattooga Wild and Scenic River Corridor* (USFS, 2012; hereafter labeled the Upper segment of the Chattooga EA).

Most Chattooga WSR recreation opportunities depend on primitive or semi-primitive settings with lower use levels and unmodified natural environments that offer a high degree of challenge, self-reliance and opportunities for solitude. These generally occur in the backcountry (more than one-quarter mile from specified roads and bridges, as defined in the Forest Plan. Use is higher in several frontcountry areas (as defined in the 2004 Sumter RLRMP as amended in 2012) located within one-quarter mile of specified roads and bridges where development is generally greater. These areas also often feature diverse activities such as fishing, scenic viewing, picnicking and camping.

In this analysis, each component of the Recreation ORV is described in its baseline condition at the time of designation and then in its condition today. Analysis of the alternatives describes how they would affected the Recreation ORV and some of its components. These components are identified by their location in the river corridor, with particular attention to recreation activities in Section II of the Chattooga WSR near the existing Russell Farmstead and the proposed Southern Appalachian Farmstead.

The lower segment of the Chattooga is divided into four sections:

Section I:	Begins at the West Fork of the Chattooga River in Georgia and ends at the main river channel;
Section II:	Begins at the Highway 28 bridge and ends at Earl's Ford;
Section III:	Begins at Earl's Ford and ends at the Highway 76 bridge; and
Section IV:	Begins at the Highway 76 bridge and ends at Lake Tugaloo.

Direct, indirect and cumulative effects on the Recreation ORV are discussed for each alternative. Cumulative effects are discussed in the context of the entire Chattooga WSR.

A. Condition at Time of Designation

The 1971 Designation Study Report describes a diverse range of high quality recreation opportunities (USFS, 1971). The report highlights activities and experiences that apply to the entire river and provides relatively less information for specific river reaches or locations. However, several passages highlight recreation features, activities and settings that are relevant to Section II of the Chattooga WSR and the area near the Russell Farmstead:

- Most of the river appeared to provide an undeveloped setting for primitive or semi-primitive recreation. For example, the report notes, "for most of its length, [the river] is hemmed in by forest; without fields, farms, homes or other signs of civilization. It is one of the few mountain rivers in the four-state area of North Carolina, South Carolina, Georgia, and Tennessee without substantial commercial, agricultural, or residential development along it shores.".

- The river for several miles on either side of Highway 28 provided a less primitive and more rural setting, but still offered exceptional recreation opportunities such as flat-water canoeing. The river downstream of the Rock Gorge and upstream of Earls Ford (which includes the Russell Farmstead and Section II), "flows quietly by fields, farms and homes" and provides "easy canoeing water through an area of pastoral development" with "paralleling roads."

- Fishing was more important upstream of Highway 28, but it did occur near the Russell Farmstead. "[M]ost of this section is considered marginal for trout, due to high water temperatures. However, rainbow and brown trout are occasionally taken in this stretch. The upper portion of the section provides the best fishing, due primarily to a stocking program by the South Carolina Wildlife Resources Department. This section also contains some of the flatter, shallower, stretches of water suitable for wading fishermen."

- The "flat bottomlands" near the Highway 28 bridge (presumably including the open fields cleared and farmed by the families that settled in this area, including the Russell family at the Russell Farmstead) were mentioned specifically as being suitable for "small game management" for hunting.

- Development on private land downstream of Highway 28 may have "detract[ed] from the aesthetic qualities of the river landscape." The concern appears directed at "dwellings" on "small tracts of private land" where "a number of summer homes are present" rather than "old farmlands with their abandoned fields and pastures, now being reforested with small trees, which create welcome openings in the forested shoreline.". In another section of the report, 22 houses and two mobile homes are noted as being visible from the river, and "a number of them are in a rundown condition, detracting from the aesthetic quality."

- The terrain and riparian vegetation in the area near Highway 28, in the area of the Russell Farmstead is described as being different from most other parts of the river corridor: "Here the river leaves the steep ridge-enclosed portions of whitewater and enters slow, smooth-flowing sections of water through narrow and then widening valleys. Much of the area along these gently sloping sections is in fields or pastures. Vegetation along the forested portions of these sections is less dense, and one can see into the forest on either side for distances varying from 15 to 50 feet [which] lessens the feeling of seclusion. While arching over the water in many places, the thinner growth

allows easier access to the land." In another part of the report, the authors note, "evidence of farming is sensed from the river."

- Visitors to the river could have explored the rich history, legends and artifacts of the area in 1971. The study report mentions the history of Chattooga Old Town (near the existing Russell Farmstead) and historic Southern Appalachian settlements.

- Chattooga-based resources were intended to attract visitors to the river and surrounding area, which would have a direct effect on the local economy: "The broader effect should be that the Chattooga will serve as a drawing card to the general area and will focus attention on the many other outstanding features in the Georgia-North Carolina-South Carolina mountain area."

- The 1971 Study Report recommends that Section II of the Chattooga WSR, which includes the Russell Farmstead, be classified as "Recreational." This classification, made at designation, means this section of the river is, "readily accessible by road, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

B. 1996 ORV Report

The 1996 ORV Report concludes that the ORVs that contributed to the Chattooga's designation as wild and scenic are still in place. However, from 1971 to 1996, several changes altered some recreation opportunities within the Chattooga WSR Corridor, including the area within Section II and in the area near Russell Farmstead).
For the Chattooga WSR Corridor overall:

- In 1996, fewer road-accessible river access points and roads existed than in the 1970s, while other facilities and trail access had increased. In 1970, only one four-mile trail and one campground (Burrells Ford) existed in the river corridor. In the next 26 years, several facilities were developed, including the Highway 76 Bridge, parking lots and toilets. The agency also built many hiking trails, as well as river access trails for boats and closed vehicle access to those locations. Many user-created trails and campsites also appeared.

- The U.S. Forest Service closed several roads within a quarter mile of the river (the Wild and Scenic Corridor boundary), with the notable exception of major roads (e.g., Whiteside Cove Road (Grimshawes Bridge), Bullpen Road, Burrells Ford Road, Highway 28 and Highway 76). These closures increased the river's naturalness and remoteness.

- In 1976, the agency zoned the Chattooga WSR to encourage boating on the lower river segment below the Highway 28 bridge and provide boat-free fishing, hiking and other backcountry opportunities on the upper river segment. The U.S. Forest Service first implemented a year-round prohibition on boating above Highway 28 in 1976 and

affirmed this decision in subsequent forest plans. In January 2012, the national forests in South Carolina, North Carolina and Georgia, all of whom share management responsibility for the Chattooga WSR, amended their forest plans to allow limited boating opportunities on the upper river segment.

- The agency implemented a self-registration permit system to monitor floating below Highway 28 which has increased substantially since designation. Private use rose from less than 1,000 visits per year before designation to about 10,000 by the late 1970s to more than 20,000 visits in the mid-1990s. Commercial boating use increased at an even greater rate--from none before designation to more than 20,000 within three years of designation, to peaks higher than 60,000 by the mid-1990s. No similar use monitoring has occurred for other uses in the corridor (hiking, fishing, camping or other uses).

- Due to the substantial increase in boating use, the 1996 ORV Report concludes that as of 1996, "the total increase in boaters on the river since designation may have caused some decrease in solitude at some points on the river during some times of the year." However, it also notes, "no new saturation levels (carrying capacities) have been determined…since the original study report was written," although the agency began managing commercial boating use by limiting the number of outfitter guide permittees that could operate on the river in 1974 and limiting the number of trips per day in 1981. Limits for private and commercial boating were defined in the 1985 Sumter National Forest Plan. Private boating capacities for boating on the lower segment of the river (all four sections) were revised in amendment 14 in 2002 and in the 2004 RLRMP.

In Section II and/or near the Russell Farmstead:

- A few of the 20+ homes or summer cabins below Highway 28 (and downstream of the Russell Farmstead) appear to have been removed since designation, although the precise number is not specified in the 1996 ORV Report. The U.S. Forest Service bought at least one property from a willing seller and removed the building. The 1996 Report says, "homes are not easily visible from the river.", which may be a change from 1971 when most were apparently counted from the river.

- Fish stocking methods and locations had changed by 1996, but were not specified in the 1996 ORV Report. In general, trout stocking downstream of Long Bottom Ford (just downstream of the Russell Farmstead) has been discontinued, but stocking at and above Highway 28 remained.

- The agency developed a boat launch and parking area on Highway 28 about 0.5 miles downstream of the Russell Farmstead. The area has a boat ramp, vault toilets and paved parking for approximately 40 vehicles.

- The 1996 ORV Report notes historic sites including Chattooga Town and the Russell Farmstead, but mistakenly suggests the latter was no longer on the National Register of

Historic Places (NRHP) after the main house burnt down in 1988. The site has remained on the NRHP since it was designated.

C. Conditions as they exist today

Some conditions have changed since designation and the 1996 ORV Report, with implications for developing a Southern Appalachian Farmstead at the existing Russell Farmstead site. U.S. Forest Service decisions on how to manage the river corridor, in combination with natural conditions and national/regional recreation use trends, have affected the types and amount of use in the corridor. The following discussion reviews the types and amounts of existing use, current recreation opportunities, levels of development and existing facility capacities as a prelude to an analysis of the effects of the alternatives on the Recreation ORV.

1. Types of existing use

The same diversity of recreation opportunities on the Chattooga River that were available at the time of designation and in 1996 are still available today, including fishing, boating, swimming, hiking, backpacking, picnicking, nature watching, horseback riding and hunting. However, use patterns have sometimes changed.

a. Trout fishing

Trout fishing continues to be best on the upper segment above Highway 28, which offers cooler waters, a better trout fishery and superior riverside trail access than the lower river segment. The year-round boating prohibition in the Nicholson Fields Reach (from Lick Log Creek downstream to Highway 28, which includes the Delayed Harvest (DH) area) continues to provide benefits for anglers interested in boat-free opportunities, although it reduces access for boaters.

Stocking patterns and fishing regulations have further encouraged angling on the upper river segment and largely discouraged it on the lower river. The most notable fishing regulation occurs in the DH for the first three miles upstream of the Highway 28 Bridge. This regulation prevents anglers from harvesting fish for a six-month season from November to May, which creates a very popular “catch and release” season for fish stocked in the fall. Additional trout stocking occurs in the upper river segment near Burrells Ford in the summer, although this is not likely to affect fishing below Highway 28. The fisheries in the Ellicott Wilderness and farther upstream are managed for wild trout.

Coldwater fishing also occurs near the Russell Farmstead because of its proximity to the upper river segment, even though it is below the Highway 28 bridge. A few harvest-oriented anglers fish water immediately downstream from the bridge during the DH season to target larger trout that have migrated from upstream. A well-known “put-and take” fishery also exists in the area after the DH season; fish are stocked throughout the

summer at both the Highway 28 bridge (about 0.4 miles upstream from the Russell Farmstead) and Long Bottom Ford (about 1.5 miles downstream).

Little specific information about trout-fishing use on the Chattooga WSR exists. A report prepared for the visitor use capacity analysis on the upper segment of the Chattooga WSR (Whittaker and Shelby, 2007) estimates use from existing use monitoring reports, a multi-agency Use Estimation Workshop (Berger and CRC 2007) and vehicle counts (a parking lot vehicle monitoring program initiated during the upper river segment planning effort). Key findings relevant to this analysis include:

i. Upper river backcountry angling use peaks during the DH season from November through May, with a distinct higher use pattern on weekends.
ii. Based on angler diary reports in 2004 and 2005 (from November to May), an average of 4.1 other anglers were observed in the Nicholson Fields Reach, although no anglers were reported on some days and only 6% of days had more than 10.
iii. Use Estimation Workshop data suggest higher use levels than angler diary information on the upper river segment. Based on these, weekend peaks may be as high as 30 people at one time (PAOT) in early fall or late spring, although average weekends are usually less than 15 PAOT. In contrast, weekday peaks rarely exceed 10 PAOT and weekdays average one to five PAOT.
iv. 1998-99 frontcountry creel survey data (counts within one-quarter mile of Highway 28) show that use at Highway 28 may peak as high as 15 anglers at one time in spring or summer, but averaged four to six PAOT on weekends and one to three on weekdays. In fall and winter, peaks were less than five and averages were one to two PAOT.
v. Vehicle counts from August 2006 to January 2007 indicate more than 30 vehicles at the Highway 28 trailhead on one November weekend (supporting workshop estimates), although averages were generally five or less. Given the time of the year, most of this use is probably linked to backcountry DH fishing rather than frontcountry fishing.

Anecdotal information suggests that fishing use from the Russell Farmstead area is generally low, although a few harvest-oriented anglers target this area during the DH season because it is the closest water to the DH-stocked area where keeping fish is legal. Informal observations from U.S. Forest Service staff suggest that no more than two to four anglers park vehicles at the existing Russell Farmstead or nearby roadside turnouts (Crane, personal communication, 2011).

b. Boating

Boating (including whitewater and scenic rafting, canoeing and kayaking) continues to be the most common recreation use on the four river sections below Highway 28. These sections of the river have higher flows and a wider range of whitewater difficulty (from Class I flat water to Class V rapids). The upper segment generally has more challenging

Class IV and V rapids that were substantial safety hazards in the 1970s, and still require advanced or expert skill today.

The U.S. Forest Service monitors boater use on the entire Chattooga WSR. Commercial outfitters are required to report actual use on the lower river segment and private boaters on both the upper and lower river segments are required to self-register before taking trips. These numbers are then tracked in a local database.

A summary of Chattooga boating use from 1988 to 2005 (Vagias, 2006; as reported in Whittaker and Shelby, 2007) and recent agency boating registration information suggests several conclusions about boating use levels relevant to this analysis:

i. The number of all boaters (private and commercial) on the lower Chattooga WSR since 1988 has ranged from about 50,000 to 80,000 per year, while the number of trips has ranged from about 4,000 to 8,500. In recent years, annual use has been about 60,000 people and 6,200 trips.
ii. For all four sections of the lower segment taken together, about 70% of all boaters but only one-third of all trips were commercial because commercial trips are considerably larger (average: 24) than private trips (average: 4). A third type of trip, commercial instructional clinics, represents about 4% of trips and people using the river.
iii. For all four sections taken together, there is generally much higher use during summer months. About 63% of boating occurs May through August. Only 8% occurs November through February.
iv. For all four sections taken together, about 90% of commercial boaters use rafts. Private boaters use kayaks (66%), canoes (21%), rafts (7%), inner tubes (4%) or other craft (3%).
v. Use levels on the different sections vary, with most trips occurring on Sections III (50%) and IV (38%). Only 2% of trips occur on Section I (West Fork) and 10% on Section II (Highway 28 to Earls Ford, the section that includes the Russell Farmstead).
vi. Section II boating use has fluctuated from about 400 to 800 trips per year (2,000 to 4,500 people per year), with most of that use coming from private trips. In recent years, use has been on the low end of that range (about 2,500 to 3,000 people per year).
vii. In general, Section II commercial use has represented less than 10% of total use, with most participants enrolling in instructional clinics rather than taking guided rafting trips. However, in years with periods of higher flows that increase challenge on Sections III and IV, as many as 300 people have taken commercial trips on Section II over the entire year.
viii. By comparison, total use is much higher on Sections III and IV, which has more challenging whitewater. From 1988 to 2005, Section III has averaged about 3,000 trips and 29,000 visitors per year, while Section IV has averaged about 2,200 trips and 28,000 visitors per year. The total number of boaters **per day** in the highest use month (July) averages about 215 on Section III and 185 on Section 4

ix. Commercial use is also a much higher proportion of total use on Sections III and IV. Commercial use comprises about 65% of visitors and 25% of trips on Section III and 85% of visitors and 46% of trips on Section IV.
x. Most Section II boaters put-in at the Highway 28 Boat Launch (or occasionally from Long Bottom Ford), and do not pass by the Russell Farmstead. However, a few boaters launch from the Highway 28 Bridge Area or continue downstream from Section I and pass the Russell Farmstead. Although boaters are required to indicate their launch sites on the self-registration permit, many fail to distinguish whether they have used the Highway 28 bridge or the Highway 28 boat launch as a put-in.

c. Hunting

Local hunters currently park at the Russell Farmstead to access wildlife openings via user-created trails. These openings that are mowed specifically to attract game for hunters – deer in the fall and turkey in the spring. Although this may be a popular area for some users. anecdotal evidence suggests hunting use is minimal in this area.

d. History-Based Use

Some people may occasionally visit the Russell Farmstead to ***explore or interpret the historic structures,*** but such use is not formally documented and appears to be low. Anecdotal reports of use levels at the Russell Farmstead suggest that it is rare for more than two to four vehicles to be parked in the existing informal parking areas. Recent recreation use monitoring for the Francis Marion and Sumter National Forests also found that while approximately 3% of recreationists report viewing historic places, less than 1% reported this was a primary purpose of their visit.

e. Other Recreational Activities—Swimming, Hiking, Relaxing and Picnicking

Other recreation activities in Section II include swimming, hiking, relaxing and picnicking. Most of these uses occur in accessible frontcountry locations along Highway 28 such as the parking areas near the Highway 28 bridge, the Highway 28 Boat Launch or the Long Bottom Ford area. Non-angling use at these frontcountry areas is generally low. Estimates suggest that frontcountry use at the Highway 28 Bridge Area may peak about five people-at-one-time (PAOT) on summer weekends, but usually averages two to four PAOT. In spring and fall, frontcountry general recreation use levels are usually less than three PAOT (Berger and CRC, 2007). Little, if any, of these types of use occur at the five-acre Russell Farmstead or the surrounding proposed 15-acre SAF. Therefore, the effects of the alternatives on these users will not be analyzed.

Hunters and hikers may continue on user-created trails into backcountry areas or other sections of the river. Although there are no designated backcountry trails in the Russell Farmstead area, the site has historically provided access for fishing and hunting; paths connect several structures and other features on the farmstead. The Chattooga River

biophysical monitoring (USDA Forest Service 2007) identified two user-created trails that provide river access near the site. Designated trails for horse or motorized use do not exist near the Russell Farmstead.

2. Recreation Experiences

a. Wild, Scenic and Recreation Classification

When designated, wild and scenic rivers are often classified with "wild," "scenic" and/or "recreational" river areas, which are defined as follows:

- Wild river areas — Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- Scenic river areas — Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

- Recreational river areas — Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

The Russell Farmstead and proposed Southern Appalachian Farmstead sites are located in a section of the Chattooga WSR that is designated as Recreational. Section 2.A.3 of the 2004 Sumter RLRMP defines the following specific desired condition for "Designated Recreation River Segments, Chattooga River":

Visitors are likely to see others. Non-motorized trails may be highly developed, including hardened trails for a high level of accessibility for persons of all abilities. The river is readily accessible by roads.

There is evidence of human activity along the shores of these segments of river.

There is limited need for visitors to rely on their personal physical abilities and primitive recreational skills within developed and trail areas of these segments. Other areas remain remote and difficult to access or negotiate.

Visitors seeking solitude may find it difficult to achieve, particularly in peak-use rafting and fishing seasons. On national forest system land, visitors enjoy a natural-appearing setting with a range of man-made recreational developments. Since there is the potential for large numbers of visitors at peak-use seasons, regulations may be necessary to protect resources and visitors. Facilities

provide visitor safety and comfort and protect the river resources. Facilities may include parking areas, trailheads, bulletin boards, interpretive kiosks, signs, restrooms, canoe/raft launches, fishing platforms, picnic sites, etc.

The management actions in each alternative will be analyzed to determine whether new development and use are compatible with the existing "Recreational" classification and desired condition in the 2004 Sumter RLRMP.

b. Recreation Opportunity Spectrum (ROS)

National Forest System lands are often categorized into one of six different "Recreation Opportunity Spectrum" (ROS) classes that range from "primitive" to "urban" (USFS, 1982). This system helps land managers and the public understand how a range of setting attributes (ecological, social and managerial) affect the quality of recreation experiences. It offers a framework for inventorying recreation settings and attributes, and considering how changes to that setting may change the outputs of recreation experiences.

The ROS class specifically for the five-acre Russell Farmstead is considered Rural; the 15-acre area surrounding the farmstead is considered Roaded Natural. These settings are characterized in tables 3.2.1-1 and 3.2.1-2.

Table 3.2.1-1 – Setting Indicators and Description for ROS Class Rural

Rural ROS Class	
Setting Indicators	**Description**
Visual Quality	Not to exceed Modification in the Foreground and Maximum Modification in middle ground.
Access	All forms of access and travel modes may occur, although access to and through the area is primarily by passenger vehicle. Road and trail surfaces are often hardened.
Remoteness	Remoteness is of little importance and moderate to high concentrations of people and sights and sounds of human activity are acceptable when not continuous. Setting is located within 1/2 mile of heavily traveled roads and state highways or areas that receive heavy aircraft travel.
Visitor Management	On-site regimentation and controls are obvious. Control facilities such as parking areas, medians and barriers harmonize with natural/exotic landscaping. Information and interpretive facilities may be complex and dominant on developed sites.
On-site Recreation Development	All Development Scales (I-V) are appropriate and maintained at intended standards necessary to accommodate the types and levels of use anticipated for the site and area. Facilities typically include visitor centers, major campgrounds and other facilities for concentrated use.
Social Encounters	User may meet many (more than 20) other parties per day on trails, in dispersed areas, on roads, and in developed facilities. Developed sites often are at full capacity, but do not exceed 80% of the design capacity over the operating season
Visitor impacts	Visitor-caused impacts are noticeable, but not degrading to basic resource elements nor do they exceed established Visual Quality Objectives. Site hardening may be dominant, but is in harmony with natural/exotic landscape.

Table 3.2.1-2 – Setting Indicators and Description for ROS Class Roaded Natural

Roaded Natural ROS Class	
Indicators	**Description**
Visual Quality	Not to exceed the Modification Visual Quality Objective and typically is Partial retention. Existing Visual Conditions ranging from Preservation through Retention are fully compatible and encouraged.
Access	All forms of access and travel modes may occur. Access to and through the area is typically by passenger vehicle, although motorized use may be restricted to provide for resource protection, user safety, or to provide a diversity of recreation opportunity.
Remoteness	Remoteness is of little importance, but low to moderate concentrations of human sights and sounds are preferred. Setting is located within ½ mile (greater or less depending on terrain and vegetation but no less than ¼ mile) of moderate to heavily-traveled waterways and/or roads which are maintained to Levels 3, 4, and 5 and open for use by the public or those areas that receive heavy small aircraft travel.
Visitor Management	On-site regimentation and controls are obvious. Control facilities such as parking areas, barriers and signs harmonize with the natural environment. Visitor information facilities are not elaborate or complex.
On-site Recreation Development	Facilities and structures generally do not exceed Development Scale III and are maintained to accommodate the types and levels of use anticipated for the site and area. Typical facilities include outdoor interpretive displays and rustic campgrounds and picnic areas.
Social Encounters	User meets less than 20 other parties per day on trails and in dispersed areas, during at least 80% of the primary use season. User may meet numerous other parties on roads and developed recreation sites. Developed sites often are at full capacity but do not exceed 80% of the design capacity over the season of operation.
Visitor impacts	Visitor-caused impacts are noticeable, but not degrading to basic resource elements nor do they exceed established Visual Quality Objectives. Site hardening may be dominant, but is in harmony with natural-appearing landscape and appropriate for the site and setting.

The management actions in each alternative will be analyzed to determine whether new development and use are compatible with the existing ROS Class Rural/Roaded Natural.

c. Development scale

Existing development at the Russell Farmstead can also be assessed on a U.S. Forest Service "development scale" (FSM 2330 Recreation, Wilderness, and Related Resource Management, Chapter 2330 – Publicly Managed Recreation Opportunities). This measures of the amount of site modification on a five-point scale (with 1 = minimum site modification and 5 = high degree of modification). The existing structures and level of development at the Russell Farmstead currently rate "2" on this scale, a rating described as follows:

> *Little site modification. Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access provided or permitted. Primary access over primitive roads. Interpretive services informal.*

The management actions in each alternative will be analyzed to determine whether new development and use may change current rating on the development scale.

3. Future Recreation Trends

Recreation planning requires information about future demand for existing and potential opportunities. For many recreation activities, past use may be a relatively good predictor of future use. However, use associated with some activities may be changing, which could affect the types of experiences or facilities needed in the future. Factors that influence trends in recreational activities include the following:

- Population growth
- Economy
- Availability of nearby alternatives
- Free time
- The "participation cycle
- Diffusion of new technologies and techniques
- Availability of instruction
- Skill development opportunities
- Fish stocking and regulation changes
- Weather
- Equipment
- Demographics

The following summary highlights relevant key findings from a synopsis of recent studies or other recreation trend sources prepared for the upper segment of the Chattooga WSR analysis (Whittaker and Shelby, 2007). It considers the following sources:

- A demographic profile of the Appalachian region (Pollard, 2005);
- A summary of natural resource-related information as part of the Southern Appalachian Assessment (USFS, 1998);
- A national survey of human-powered recreation participation (OIA, 2005);
- Projections of outdoor recreation participation (Cordell et al., 1999); and
- Trend conclusions made at a multi-agency Use Estimation Workshop (Berger and CRC 2007) specific to the upper segment of the Chattooga WSR.
- General regional population trends:
- Population growth in the Southern Appalachian region has been consistently high in recent years. About one-third of regional counties grew 20% or more from the 1990s. through 2010, although census data suggests this growth may have slowed more recently.
- Georgia was the one of the fastest growing states in the country during the past two decades, with population increasing 49% over the 20-year period. This growth was partly fueled by nearly 40% growth in the northeast counties in the 1990s alone. In the past decade, growth has been less dramatic and concentrated in Atlanta's metro area and the adjacent counties; Georgia only grew 18% from 2000 to 2010 (but still more than the national rate). Similarly, while Rabun County, which is immediately adjacent to the Chattooga WSR, has grown only 8% from 2000 to 2010, other nearby counties grew faster (e.g., White County at 36%, Habersham County at 20% and Towns County at 12%). South Carolina has grown at a slightly lower rate—from 15% from 2000 to 2010, although Appalachian counties grew at a slightly lower rate (e.g., about 12% in Anderson and Oconee counties). Increases in population were due primarily to natural increases, internal migration and some immigration (particularly in Northern Georgia) (Pollard, 2005).
- Visitation trends on national forests in the Southern Appalachians increased from about seven million visitor days in 1970 to 13 million in 1980 (more than an 80% increase). This increase slowed from 1980 to 1990 (16 million, an increase of about 20%) and now appears to be keeping pace with population trends. A review of recreation use as part of the Southern Appalachian Assessment suggests increased recreation participation in almost all activities except hunting (USFS, 1998, p. 62).
- The participate rates of older and non-white populations are increasing in recreation; growth rates are above the regional average for these sub-groups. However, most recreation use days (more than two-thirds) are still produced by the "most active" 25% of participants who are predominately white, male and under age 60 (USFS, 1998), as well as urban or suburban residents (e.g., from Atlanta, Columbia S.C.).
- Vacation patterns are shifting nationally and regionally. In general, people are taking more long weekend trips in comparison to traditional two-week vacations (USFS, 1998).

Specific recreation use trends:

- ***Frontcountry recreation in general*** (e.g. picnicking, sightseeing, swimming and others) is likely to increase as more people take shorter trips closer to home and population in the area increases. Projections estimate that sightseeing in the South will increase by about 40% from 2000 to 2020 (Bowker et al., 1999). However, Use Estimation Workshop (Berger and CRC, 2007) participants generally reported stable or slow growth for these activities for the upper segment of the Chattooga in the past decade.
- National ***fishing use*** projection suggests this type of recreation will remain flat or decline. The National Survey on Fishing, Hunting and Wildlife-related Recreation (U.S. Census, 2006) shows the number of anglers declined 15% from 1996 to 2006; state data for Georgia and South Carolina suggests fishing participation has been flat in recent years. Some types of fishing, however, may still be growing, including fly-fishing; an annual survey from the Outdoor Institute of America shows fly fishing participation increased from 6% to 8% of adults from 1998 to 2004.
- Upper Chattooga Use Estimation Workshop participants concluded that ***regional fishing*** use saw considerable growth (particularly frontcountry fishing) from the mid-1970s to the late-1990s (Berger and CRC, 2007), but it appears to have been more stable since that time (Rankin, 2007). Individual reaches of the upper river segment (particularly in the DH area within the Nicholson Fields Reach) have seen increased use and are candidates for more modest growth in the future.
- ***Whitewater boating*** is likely to remain stable. Less than 2% of the national population participates in whitewater kayaking, with another 5% reporting participation in rafting trips. Whitewater kayaking saw growth in the mid- to late-1990s, but that growth has flattened in recent years. Use data from the lower segment of the Chattooga WSR shows considerably higher use in the late-1990s, with a drop-off in the first part of the 2000s that has continued through 2010.
- Boating on less challenging rivers (***scenic floating***) in canoes, tubes or other small craft has higher participation rates than whitewater boating and may be increasing at a greater rate. About 10% of the national population participates in canoeing, and an additional 3% participate in recreational (sit-on-top) kayaking. Not all this use occurs on rivers, but there is probably a larger population of potential users for floating on easy rivers than whitewater boating. Scenic floating has grown consistently since 1998; however, use of Sections I and II on the lower segment of the Chattooga WSR (which features scenic floating) has generally declined from peaks in the mid-1990s, and appears to have stabilized over the past decade, similar to whitewater boating).

- ***Day hiking*** appears to be increasing at or slightly faster than the population rate, and is probably the type of use most likely to increase in the corridor. Participation projections estimate that hiking in the South will increase about 48% by 2020 (Bowker et al., 1999).

Taken together, backcountry use in the corridor near the Russell Farmstead is likely to increase slightly over the life of the forest plan; frontcountry use is likely to increase at a slightly higher rate. The effects section of this chapter reviews how these trends may affect impacts under existing management and the two action alternatives that may introduce more use and development into the area.

4. Capacities

The Wild and Scenic Rivers Act requires that management plans "address resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the [WSRA's] purposes" (16 U.S.C. § 1274(d), Wild and Scenic Rivers Act, Section 3(d) (1)). For the purposes of this analysis and consistent with the decision for the upper segment of the Chattooga WSR, capacity is defined as the amount and type of use that protects and enhances river values; they are numbers on a use-level scale for specific times and places (Whittaker et al., 2011). Existing management has identified explicit capacities for boating on some sections of the lower river segment, and frontcountry areas and backcountry reaches on the upper river segment. Action alternatives in this EA have identified additional explicit capacities for development associated with the proposed SAF, as discussed in the description of alternatives (Chapter 2) and the analysis of each alternative in this section of the EA.

a. Existing capacities on lower river segment

The current RLRMP (USFS, 2004) includes capacities for commercial and private boating use. Commercial use limits vary by section, season, weekends/weekdays and flows.

- Commercial use capacities on Sections I and I cannot exceed six trips per day or 20 trips per week; they also cannot exceed two trips per weekend day to allow higher use by private groups.
- Higher commercial use levels are allowed on the downstream whitewater sections—from four to seven trips per day on Sections II and III to six trips per day on Section IV. People per day limits range from 160 to 280 people on Section III and 160 to 360 on Section IV (depending on type of day, season or flows).
- The agency has not set capacities for private boating use on Sections I and II, but has set them for Sections III and IV—from 125 people (weekdays) to 175 (weekends) for Section III and 75 (weekdays) to 160 (weekends) on Section IV. To date, the agency has not needed to impose direct measures to limit private boating use such as an advanced reservation or first-come/first-served permit system because use levels have rarely approached specified capacities. Adaptive management will be triggered if limits are exceeded on 20 to 50 days per year, depending on the section, for two consecutive years.

b. Existing capacities on the upper river segment

In addition, the Sumter RLRMP as amended in 2012 established capacities for several frontcountry areas and backcountry reaches. The relevant capacities for the area upstream of the Russell Farmstead are:

- 35 groups or 85 people at the frontcountry Highway 28 Bridge Area at one time.
- 15 groups or 40 people per weekday and 30 or 95 per weekend day in the backcountry Nicholson Fields Reach (Highway 28 upstream to Lick Log Creek).

These capacities include consideration of use that may originate from existing informal parking areas near the Russell Farmstead (as described previously in this Recreation ORV write up). Monitoring as described in Amendment 1 to the 2004 Sumter RLRMP is expected to assess use trends in this and other upper segment areas/reaches to determine if use is increasing from 2007 levels and threatening to exceed specified capacities. If average counts for a month exceed 2007 levels by more than 10%, adaptive management to reduce or redistribute use could be triggered.

c. Future capacities associated with the proposed SAF

In this EA, use associated with the proposed SAF development is the focus in the two action alternatives, which would be managed by designing the parking area to match the capacities or establishing maximum use levels to protect the area's ORVs. To develop such capacities, planners considered social and ecological impacts of potential use levels and the associated surface disturbance for parking, as well as how other management actions might mitigate impacts from higher use. In these deliberations, planners relied on several sources of information, including:

1. Use Estimation Workshop (Berger and CRC 2007);
2. Vehicle counts at existing or similar access areas (Berger 2007);
3. General relationships between use levels and impacts (as discussed in Whittaker and Shelby, 2007);
4. Tolerances for impacts from Chattooga studies or those from other rivers; and
5. Other analyses that associate vehicle counts at access sites with current peak-use levels.

In both action alternatives, planners considered the effects of new capacities at the proposed SAF site on other nearby facilities, as well as established capacities for boaters on some lower river sections and all users in the upper river segment.

In general, capacities were developed with recognition that social impacts (especially potential crowding and congestion at the proposed SAF site) are probably the most "limiting factor" for use levels in the area. While higher capacities (and greater surface disturbance to create enough parking spaces) can have adverse impacts on biophysical

or cultural resources in recreation settings, the type (or behavior) of users often matters more than the amount of use. In addition, many biophysical impacts can be reduced more effectively by other actions in the management prescription (e.g., trail hardening and redesign, directing use away from sensitive areas) rather than adjusting use levels (Cole 1987, 1994, 2000).

Because capacity is based on achieving a defined management prescription, the impact that is violated at the lowest use level is the "limiting factor." At the proposed SAF site, capacities have been developed to ensure that management actions within the two action alternatives would continue to do the following:

- Protect, and, wherever possible enhance, the river's Outstandingly Remarkable Values (this section of the EA specifically addresses the Recreation ORV);
- Provide opportunities for desired recreation experiences of both traditional and new users.

II. Existing Impacts to the Environment

Some anglers may park in spaces at the Russell Farmstead or nearby pullouts on Highway 28 while accessing the Highway 28 Frontcountry Area or the Nicholson Fields Reach in the upper segment of the Chattooga WSR Corridor. Anecdotal evidence suggests this type of use is low (less than five vehicles at one time) even when the Highway 28 Bridge Frontcountry Area parking is full and it was considered when establishing capacities for the Nicolson Fields Reach in Amendment 1 in the 2004 *Sumter RLRMP*. However, this use does contribute to increased use and impacts in the upper segment of the Chattooga WSR Corridor.

Kayakers, canoeists, rafters and tubers who float past the Russell Farmstead site experience a Roaded-Natural setting with little interaction with visitors to the site. It is not possible to see the existing structures at most water levels due to the high bank and riparian vegetation; therefore, encounters with anglers, hunters or history enthusiasts visiting the site are very low.

Hunters currently use the wildlife openings (mowed fields) near the Russell Farmstead in the fall for deer hunting and in the spring for turkey hunting. They experience a mostly Roaded Natural ROS setting with solitude and very little interaction with other users (including anglers, floaters or history enthusiasts) which probably contributes to increased hunting success.

Occasional history enthusiasts may visit the Russell Farmstead to examine the remnant buildings, and probably seek the Rural/Roaded Natural ROS setting that is currently available. This provides opportunities to interpret historical buildings and understand their historical relevance. Other existing uses near the Russell Farmstead are also low and generally associated with traditional activities such as fishing and hunting, as previously described. Most of these users appear to use frontcountry areas near the farmstead (e.g., the Highway 28 Bridge Area, the farmstead itself or the Highway 28 Boat Launch) for access to the river or surrounding fields. Given their low numbers, traditional uses are likely to have few direct impacts on their own experiences or those of occasional "history enthusiast" visitors to the Russell Farmstead.

III. Environmental Consequences

A. Alternative 1—Direct and Indirect Effects

1. Types of Use

a. Fishing

Fishing opportunities would continue in the Russell Farmstead vicinity. Existing user-created trails would remain unimproved with little to no design improvements or maintenance activities to reduce erosion impacts or handle drainage problems. Therefore, the sense of naturalness would remain the same. However, these trails would still provide access to the river for anglers. Existing structures would remain visible but low profile.

b. Boating

Boating would continue to occur behind the Russell Farmstead. Existing structures would remain largely unobtrusive from the river.

c. Hunting

User-created trails would still provide access to wildlife openings for hunters. Existing fields would continue to be mowed to provide wildlife habitat openings. This would continue to offer acceptable biophysical conditions for fall deer and spring turkey hunting opportunities. The existing structures would remain visible but low profile for hunters accessing the river or fields for their activities.

d. History-based use

User-created trails and parking would still provide access to the site's structures for history enthusiasts. The existing Russell Farmstead structures would probably remain stable from a safety perspective, but would otherwise become more dilapidated over time. No new structures would be relocated or constructed to create a living history interpretive attraction. No new signage or programs would be developed to provide new interpretive opportunities. The dilapidation of the buildings would diminish their aesthetic and historic value to history enthusiasts. In addition, the limited interpretation at the existing site would provide this same user group with inadequate opportunities.

2. Recreation Experience

a. ROS Class

The ***ROS class*** for the area would remain ***Rural*** at the five-acre Russell Farmstead site and Roaded Natural for the surrounding 15-acre area. The Roaded Natural class is consistent with the overall Chattooga WSR "Recreational" classification for this segment of the river and the stated Desired Condition for "Designated Recreation River Segments, Chattooga River" in the *2004 Sumter RLRMP*. The Rural Class determination, although inconsistent with the desired condition for a Recreation Segment of a Wild and Scenic River, is based upon the existence of the structures and landscapes of this unique and important NRHP site and has its own intrinsic values within a much larger Roaded Natural setting.

b. Development Scale

The Russell Farmstead site and the surrounding area would remain a "2" on the development scale.

c. Wild, Scenic and Recreational Designation

The ROS Class of Rural and Roaded Natural and the development scale of "2" both are consistent with the Recreation Classification of this section of the Chattooga WSR.

3. Capacity

Parking would stay informal and undefined. Approximately 15 parking spaces at unofficially used areas at the Russell Farmstead or in adjacent turnouts along Highway 28 would remain, even though "at-one-time" peak use levels do not require more than 30% of these spaces. The number of spaces available suggests a *de facto* design capacity, even though existing management does not formally establish one. This design capacity is expected to maintain the existing recreation experience for both land-based and river-based users in the Russell Farmstead area into the future.

With no new parking added at the site, there would be no new impacts on use levels on the upper segment of the Chattooga. A few anglers will continue to park at the Russell Farmstead rather than at the more congested Highway 28 Bridge Area during the peak DH season and recreate in the Nicholson Fields Reach. However, these traditional users were considered in the visitor use capacity analysis conducted for the upper river segment of the Chattooga WSR; they are not expected to impact the capacities established for the Highway 28 Bridge Area or the Nicholson Fields Reach.

4. Future Recreation Trends

Likely ***recreation use trends*** would apply to ***existing use patterns*** over the 10-year planning cycle. Fishing, floating and hunting uses in the areas adjacent to the Russell Farmstead are likely to grow slowly or remain stable, even with small regional population increases; these uses are not expected to substantively increase the relatively low use levels that have occurred in recent years. Section II has a long history of floating use in summer, and is less well known for its fishing opportunities downstream of the Highway 28 Boat Launch where most boaters start their trips. Without substantial restoration or maintenance to existing structures, let alone more active interpretive signage or programs to attract new use, the number of history enthusiasts is also likely to remain low.

5. Recreation ORV

Opportunities for traditional (fishing and hunting) and historical interpretation would continue to be available; use levels would remain low enough to protect all recreation opportunities occurring in the area. No new development is likely to attract additional use to the area and threaten capacities on Section II of the lower river segment or the Nicholson Fields Reach on the upper river segment. As outlined in Amendment 1 to the *2004 Sumter RLRMP*, the overall Recreation ORV would continue to be protected.

B. Alternative 1—Cumulative Effects

A list of past, present and reasonably foreseeable activities is listed in Table 3.1-1. Recreation use decisions on the upper segment of the Chattooga were completed in 2012. The final decision sets frontcountry and backcountry capacities in the Nicholson Fields Reach based on current parking facilities at the Highway 28 Bridge. As use increases at this site, some users may recognize opportunities to access Nicholson Fields from informal parking areas at or near the Russell Farmstead. Design criteria to separate and limit parking for this purpose would prevent this from occurring.

Other past, present and reasonably foreseeable activities would have no impacts on current parking at the Russell Farmstead except the potential for additional outfitter/guiding permits being proposed that may impact use in the Chattooga WSR. However, the intent of these permits is to “fit-in” with current capacities which may result in permitting new uses to non-peak times of the year to stay within current Forest Plan direction.

C. Alternative 2 – Direct and Indirect Effects

1) Types and Amounts of Use

a. Fishing

Fishing opportunities would continue to be available in the proposed Southern Appalachian Farmstead vicinity. However, these opportunities could be affected by the increased development at the new Southern Appalachian Farmstead, particularly during the early construction phases.

Existing structures would be rehabilitated and improved. In addition, the two ***relocated cabins*** and new caretaker residence would be developed on the site to provide interpretive opportunities and related commercial services. The existing and new structures would become more visible, increasing the area's level of development, and attracting history-based use to the area, particularly during events. Sustainable trails to manage pedestrian traffic would be established at the site. New fencing, animals, pastures, gardens and other uses would be established. This use could displace some anglers interested in more remote settings or solitude, especially during the construction/ relocation phases.

b. Boating

Boating opportunities would continue to be available behind the proposed Southern Appalachian Farmstead. Rehabilitated, improved or new structures, related trails or fencing, animals, pastures, gardens and other uses would be slightly more visible to floaters (especially in fall, when foliage has dropped), but they would remain largely unobtrusive from a floater perspective. This is consistent with the current classification of this portion of the WSR as recreational and fits well with the pastoral nature of the landscape completed for this area in the designation study. Because most Section II floaters put-in downstream of the site, they likely would never pass the site. Therefore, boaters would remain largely unaffected by the proposed action in Alternative 2.

c. Hunting

Sustainable trails and/or the historic stagecoach road would be available to provide access to wildlife openings for hunters. The existing fields would continue to be mowed to provide wildlife habitat openings. Hunters would still be able to access these openings. This would continue to offer acceptable biophysical conditions for fall deer and spring turkey hunting opportunities.

Existing structures would remain visible but low profile for hunters accessing the river or fields for their activities. However, new or improved structures (particularly the two ***relocated cabins*** to be developed on the site to provide interpretive opportunities and

related commercial services) would become more visible, increasing the area's level of development and attracting history-based users to the area (particularly during events). This would displace users interested in more remote settings or solitude, particularly during construction/ relocation phases. Hunters are likely to be more solitude-seeking than other traditional area users, and would more likely be displaced by history enthusiasts attracted to interpretive sights or programs.

d. History-based use

History-based use in the area would likely increase because of new interpretive opportunities.

The existing ***Russell Farmstead structures*** would be stabilized and restored to eliminate any safety concerns; this would improve their aesthetic and historic value to history enthusiasts. Two ***relocated cabins*** would provide additional interpretive opportunities and related commercial services.

A 24-hour, live-in caretaker housed in the ***new caretaker's residence*** also would provide security and an on-site presence. This would allow for improved maintenance of trails and interpretive features, but would slightly increase the overall development level of the area. However, this residence would be located across Highway 28 and would likely have minimal adverse impacts on the aesthetic or recreational opportunities on the river or at the proposed SAF.

Sustainable trails to manage pedestrian traffic would be established at the site to reduce potential erosion impacts or handle drainage problems. This would increase the sense of naturalness as the site.

2. Recreation Experience

a. ROS Class

The ***ROS class*** for the area would be maintained as Rural/Roaded Natural at the 20-acre proposed SAF site. All categorizations remain consistent with the overall WSR "Recreational" classification for this segment of the river and the stated Desired Condition for "Designated Recreation River Segments, Chattooga River" in the *2004 Sumter RLRMP*.

b. Development Scale

The ***development scale*** of the structures would change from level 2 (little site modification, with rudimentary improvements to protect the site) to level 4 (site heavily modified, some facilities designed for user comfort/convenience, facility design may incorporate synthetic materials and artificial road or trail surfacing). Interpretive services would become formalized

and scheduled. Interpretation signing would increase to provide several kiosks or signs at principle farm features. As discussed earlier, during construction phases of this development, most recreation activities in the area would be displaced. After completion, development levels would have the greatest impact on hunters (who are more solitude-seeking and might prefer to avoid history enthusiasts attracted to interpretive sights or programs). This development scale is consistent with the ROS class of Rural and Roaded Natural.

c. Wild, Scenic and Recreation Classification

The ROS Class of Rural and Roaded Natural and the development scale of IV are consistent with the Recreation Classification of this section of the Chattooga WSR.

3. Capacity

Parking would be formally developed and increased to 30 vehicle spaces, with up to five more designated for "traditional uses" of the area (fishing and hunting), if possible, and the remainder dedicated to the proposed SAF interpretive site. Increased visitation to the site would not change the ability of anglers or hunters from parking in the area (at the level they have experienced in the past). Parking would be consistent with a new formal capacity for the site – approximately 30 groups at one time during regular hours.

Additional use may be allowed during special events (e.g., music or historic use demonstrations, fundraising barbecues) when the OHC may shuttle additional SAF visitors from the parking area at the Highway 28 Boat Launch to the proposed SAF during an event. These users would be limited to recreating at the SAF site only.

With new parking added at the proposed SAF site, there would be the ***potential for impacts on upper segment of the Chattooga use levels***. On higher use days on the upper segment, several Nicholson Field users may park at the Russell Farmstead rather than at the more congested Highway 28 Bridge Parking Area, potentially degrading the ability of the Highway 28 Bridge Parking Area to enforce upper segment of the Chattooga capacities (anglers would "game" the system by parking a farther half mile away). Therefore, staff from the Oconee Heritage Center in partnership with the agency would monitor parking at the SAF to determine whether visitors associated with more than five vehicles are entering the upper segment of the Chattooga WSR Corridor.

Management techniques to prevent users from affecting established capacities in the Nicholson Fields Reach would include site management, indirect regulation of use and direct regulation of use (FSM 2354.41a). Actions could include but are not limited to designing the parking lot with a gate that could be closed, information signs and time-limited parking spots for SAF visitors. These actions would provide continued access for traditional users in the five parking spots, accommodate casual visitors to the farmstead and ensure capacities in the Nicholson Fields Reach are maintained.

4. Future Recreation Trends

Likely ***recreation use trends*** would apply to ***existing use patterns*** over the 10 year planning cycle. Fishing, floating and hunting uses in the areas adjacent to the proposed SAF are likely to grow slowly or remain stable even with small regional population increases, and are not expected to substantively increase the low levels of use that have occurred in recent years. Seasonal differences in uses would also continue to minimize conflicts between these three groups; Section 2 has a long history of floating use in summer, and is less well known for its fishing opportunities downstream of the Highway 28 boat launch where most put-in. However, with substantial new restoration and living history interpretive opportunities as the attraction, the site would see increased frontcountry use by causal tourists and history enthusiasts.

5. Recreation ORV

Opportunities for traditional (fishing and hunting) and historical interpretation would continue to be available, and traditional use levels would remain low enough to protect all recreation opportunities that occur in the area. However, new development is likely to attract additional history-based use to the area, which may displace some traditional users (particularly hunters), especially during the construction phase. Mitigation that separates history-based use from other uses will ensure that additional parking capacity at the proposed SAF will not adversely affect recreation in the Nicholson Fields Reach of the upper segment of the Chattooga WSR. As outlined in the existing Sumter RLRMP, the overall Recreation ORV would continue to be protected.

E. Alternative 3 – Direct and Indirect Effects

Same as Alternative 2 with the following exception:

Only one ***relocated cabin*** would be developed on the site to provide interpretive opportunities and related commercial services. As with improvements to existing structures, these would become slightly more visible to floaters, and would displace anglers and hunters during construction/relocation phases, but to a slightly lesser degree than two new cabins (as in Alternative 2).

F. Alternatives 2 and 3 – Cumulative Effects

A list of past, present and reasonably foreseeable activities is listed in Table 3.1-1. Recreation use decisions on the upper segment of the Chattooga were completed in 2012. The final decision sets frontcountry and backcountry capacities in the Nicholson Fields Reach based on current parking facilities at the Highway 28 Bridge. As use increases at this site, some users may recognize opportunities to access Nicholson Fields from informal parking areas at or near the Russell Farmstead. Mitigation efforts to separate and limit parking for this purpose is designed to prevent this impact.

Other past, present and reasonably foreseeable activities would have no impacts on current parking at the new SAF parking area except the potential for additional outfitter/guiding permits being proposed that may impact use in the Chattooga WSR. However, the intent of these permits is to "fit-in" with current capacities which may result in permitting new uses to non-peak times of the year to stay within current Forest Plan capacities.

3.2.2 BIOLOGY ORV

3.2.2A FISHERIES

I. SUMMARY OF FINDINGS

The Chattooga Wild and Scenic River (WSR) contains both cold-water and cool-water fisheries. The cold-water fisheries and trout habitat are located primarily above SC Highway 28 in the upper segment of the Chattooga WSR; the cool-water fishery is located in the lower river segment. Trout stocking occurs periodically throughout the year and has been done since before the river was designated as wild and scenic. All alternatives would continue to protect and enhance the fisheries component of the Biology ORV of the Chattooga Wild and Scenic River.

II. AFFECTED ENVIRONMENT

A. Condition at Time of Designation

The 1971 Designation Study describes the trout fishery, including mileage estimates, and fishing opportunities by dividing the river and West Fork into five sections:

1. Headwaters to Bullpen Road Bridge

The Chattooga River and its tributaries above this point are excellent trout waters, comparing favorably with better streams in all three states.

2. Bullpen Road Bridge to Highway 28

This section of stream is providing fair to good fishing for wild rainbow and brown trout, with brown trout the predominant species. Brook trout are present in most tributaries.

3. Highway 28 Bridge to Highway 76 Bridge

The Chattooga River in most of this section is considered marginal for trout, due to high water temperatures.

4. Highway 76 to Tugaloo Lake

This section of the main stream is the only portion not suitable for classification as a trout stream.

5. West Fork of the Chattooga River

The West Fork is a fairly large stream furnishing fairly good fishing for rainbow and brown trout in its lower reaches.

The Federal Register, Volume 41, Number 56 – Monday, March 22, 1976 (also known as 1976 Federal Register) not only includes formal descriptions of the wild and scenic river boundaries and classifications but also includes information on the fisheries:

> A native fishery will be encouraged. Fish stocking will be permitted at the Highway 28 Bridge, Burrells Ford, Bullpen Bridge, Long Bottom Ford on the river, and Warwoman and Overflow Bridges on the West Ford [sic].

B. 1996 ORV Report

The 1996 ORV Report evaluated changes in the trout fishery since designation. The report notes this is the southernmost range of natural trout habitat; the river is home to rainbow, brook and brown trout. Due to the variable water temperatures, trout fishing is best in the upper segment of the Chattooga River, while redeye bass and redbreast sunfish provide excellent fishing in the lower reaches.

C. Conditions as they Exist Today

1. Aquatic Communities

The Russell Farmstead is and the proposed Southern Appalachian Farmstead (SAF) would be located adjacent to the Chattooga River near the Highway 28 bridge crossing. Streams in the proposed project area include the Chattooga River and an unnamed tributary to the Chattooga River. The Chattooga River is within the Tugaloo watershed. These streams contain cold to cool water aquatic communities. Fish surveys were conducted in 2007 by the South Carolina Department of Natural Resources (SCDNR) and U.S. Forest Service (USFS) personnel in the Chattooga River upstream the Highway 28 bridge. The unnamed tributary to the Chattooga River has not been inventoried. Habitat surveys have not been conducted in project area streams or in the Chattooga River below Highway 28.

2. Aquatic Federally Threatened, Endangered and Proposed Aquatic Species and Region 8 Forest Sensitive Aquatic Species (PETS)

No federally listed aquatic species occur in the Chattooga River or its tributaries. Five Region 8 Forest Sensitive aquatic species may occur in the watershed (see Table 3.2.2A-1). Of these five species, there are state natural heritage program element occurrence (EO) records for *Cambarus chaugaensis* and *Alasmidonta varicosa* in the Chattooga River**.** Also, English (1990) sampled *Beloneuria georgiana* in the Chattooga River and two tributaries. *Ophiogomphus edmundo* was recently reported from the Chattooga River in the vicinity of Highway 76 (Abbott 2010).

Table 3.2.2A-1. PETS aquatic species for Chattooga River Watershed.

Species	Species Ranking				Forest List	Habitat
	Global	State	AFS	Forest		
Chauga crayfish *Cambarus chaugaensis*	G2	GA-S1 SC-S2S3	T	Sensitive	CONF SNF	Fast-moving, rocky tributaries of the upper Savannah River.
Brook floater *Alasmidonta varicosa*	G3	GA-S2 SC-SNR	T	Sensitive	CONF SNF	High gradient streams and moderate gradient rivers among rocks and gravel substrates in sandy shoals, riffles and moderate rapids.
Georgia beloneurian stonefly *Beloneuria georgiana*	G2	GA-S2		Sensitive	CONF	High elevation waterfalls spray cliffs and spring brooks.
Mountain river cruiser *Macromia margarita*	G3	GA-S1 SC-SNR		Sensitive	CONF	Mountain, sometime Piedmont streams and rivers with high water quality, forested watersheds and silt deposits among rocks.
Edmund's snaketail *Ophiogomphus edmundo*	G1G2	GA-S1		Sensitive	CONF	Clear moderately flowing mountain streams and rivers with sand or gravel riffles.

Global and state species ranking is defined in Table 3.2.2A-2.

Table 3.2.2.A-2 Global and state conservation status ranks to species. (Nature Service 2011 and SC, NC and GA state natural heritage programs)

Global status rank	State status rank	Definition
G1	S1	Critically Imperiled – at very high risk of extinction due to extreme rarity, very steep declines or other factors
G2	S2	Imperiled – at high risk of extinction due to very restricted range, very few populations, steep declines or other factors
G3	S3	Vulnerable-at moderate risk of extinction due to a restricted range, relatively few populations, recent and widespread declines, or other factors
G4	S4	Apparently Secure – uncommon but not rare; some cause for long-term concern due to declines or other factors
G4Q		G4 species with questionable taxonomy that may reduce conservation priority
G5	S5	Secure – common, widespread and abundant
GNR	SNR	Not Ranked – the rank has not been assessed
G4Q		G4 species with questionable taxonomy that may reduce conservation priority
	S?	Uncertain Rank – Inexact or uncertain numeric rank

The American Fisheries Society (AFS) has assigned status ranks to crayfish species (Taylor et al. 2007) and freshwater mussel species (Williams et al. 1992). AFS status rank includes CS (currently stable), V (vulnerable), SC (Special Concern), T (threatened) and E (endangered). The T status rank indicates that the species is likely to become endangered throughout all or a significant portion of its range.

The SC Comprehensive Wildlife Conservation Strategy (Kohlsaat et al. 2005) designates the South Carolina Priority Species List. These species warrant conservation concern to maintain diversity in South Carolina waters. The species are ranked in priority as moderate, high and highest conservation priority. *Cambarus chaugaensis* and *Alasmidonta varicosa* are rated as highest conservation priority.

The Final Environmental Impact Statement (FEIS) for the *Revised Land and Resource Management Plan, Sumter National Forest* (RLRMP) addresses Aquatic Viability by watershed. The Chattooga River watershed was represented by two Region 8 Forest Sensitive species, *Cambarus chaugaensis* and *Alasmidonta varicosa*. The "Aquatic Viability Outcome" for these species is that they are potentially at risk in the watershed; however, the U.S. Forest Service may influence conditions in the watershed to keep the species well distributed. Therefore, the likelihood of maintaining viability is moderate. Sediment was determined to be a risk factor for aquatic species viability in the Chattooga River watershed.

Alderman (2004) noted that the population of *Alasmidonta varicosa* in the Chattooga River was the best in the Southeast and, therefore, special conservation should be emphasized for this population. From Georgia through at least Maryland, this is the best extant population within this range (Alderman 2008). The majority of this population is located from the vicinity of Highway 28 and downstream in the Chattooga River, where recreational uses include fishing and boating.

Documented occurrences in the Chattooga River watershed exist for four of the five Region 8 Forest Sensitive aquatic species. There are state natural heritage program EO records for *Cambarus chaugaensis* in North Carolina. Its range includes the Chattooga River watershed in North Carolina, South Carolina and Georgia and the Chauga River watershed in South Carolina, where it is most abundant (NatureServe 2011).

State natural heritage program EO records exist for *Alasmidonta varicosa* in the Chattooga River**.** *Alasmidonta varicosa* is located in the main channel from the vicinity of the Highway 28 bridge and downstream in South Carolina and Georgia. The mussel's range extends along the east coast from Georgia into Canada.

English (1990) sampled *Beloneuria georgiana* in the Chattooga River and two Georgia tributaries. *Beloneuria georgiana* is known from Georgia, North Carolina and Tennessee. *Ophiogomphus edmundo* was recently reported from the Chattooga River in the main channel of the river in the vicinity of the Highway 76 bridge (Abbott 2010). This species has also been reported from Georgia, North Carolina and Tennessee. *Macromia margarita* is not documented from the watershed, but occurs in adjacent watersheds in South and North Carolina. For this reason, and the likelihood of discovering more occurrences (NatureServe 2011), this species is included for analysis. *Macromia margarita* is documented from Alabama, Georgia, North Carolina, South Carolina, Tennessee and Virginia. In South Carolina, this species is documented from the Seneca River watershed in Pickens County. There is the possibility that these three aquatic insects occur in a wider range than is documented due to the lack of wide range sampling and the difficulty of identifying individuals at different life stages. English and Pike (2009) found the genus *Ophiogomphus* at seven sites in the Chattooga River watershed, but were unable to identify them to the species level.

Habitat descriptions for Region 8 Sensitive aquatic species are summarized in Table 3.3.1A-1. It is possible that *Cambarus chaugaensis*, *Beloneuria georgiana*, *Ophiogomphus edmundo* and *Macromia margarita* occur throughout the Chattooga River watershed. However, *Alasmidonta varicosa* is only known from the vicinity of Highway 28 bridge and downstream in the main channel of the Chattooga River.

3. Forest Locally Rare Aquatic Species

The Chattahoochee-Oconee National Forest (CONF) maintains a locally rare species list while the Sumter National Forest does not. The analysis will include effects on locally rare species since the proposed project area occurs on the boundary of the two forests. Those species that may occur in the watershed are listed in Table 3.2.2A-3. *Notropis leuciodus* has been sampled in the Chattooga River near the SCDNR and Georgia Department of Natural Resources (GADNR).

Table 3.2.2A-3. Forest listed Locally Rare aquatic species for the CONF.

Species	Species Ranking				Forest List	Habitat
	Global	State	AFS	Forest		
Whitetail shiner *Cyprinella galactura*	G5	GA-S3S4	CS	LR	CONF	Cool, usually clear, high gradient headwaters, creeks and small rivers with clean gravel and rubble.
Tennessee shiner *Notropis leuciodus*	G5	GA-S3	CS	LR	CONF	Pools and runs of cool, usually clear creeks and small to medium rivers with gravel-rubble substrate.

Additional AFS status rank (Warren et al. 2000) in this table: CS (currently stable) denotes a species whose distribution is widespread and stable or a species that may have declined in portions of its range but is not in need of immediate conservation management actions.

4. Aquatic Management Indicator Communities

Table 3.3.1A-4. Aquatic Management Indicator Communities for the Sumter National Forest.

Aquatic Management Indicator Communities	Forest	Habitat
Management Indicator Communities		
Cold Water Communities	SNF	Chattooga River and tributaries; Brook trout (*Salvelinus fontinalis)*, rainbow trout (*Oncorhynchus mykiss)* , brown trout (*Salmo trutta)* , blacknose dace (*Rhinichthyes atratulus)*, aquatic insects, crayfish and mollusks.
Cool Water Communities	SNF	Chattooga River and tributaries; Trout and other fish species, aquatic insects, crayfish and mollusks.

The Chattooga River and its tributaries contain cold to cool water aquatic communities from the headwaters to the downstream reaches. The aquatic community as identified in the 2004 Sumter RLRMP serves as a management indicator that is monitored to indicate the effects of management on riparian resources. Fish, crayfish, aquatic insects and mollusks are all components of the community. Tables 3.2.2A-5, 3.2.2A-6 and 3.2.2A-7 address the aquatic community and each table provides a list of aquatic species. Table 3.2.2A-5 lists fish species from surveys conducted in the Chattooga River watershed by the U.S. Forest Service, SCDNR and GADNR.

Table 3.2.2A-5. Fish species sampled in the Chattooga River watershed.

Scientific Name	Common Name	Species Captured Near Hwy 28
Catostomidae	**Suckers**	
Catostomus commersoni	White sucker	
Hypentelium nigricans	Northern hogsucker	x
Moxostoma collapsum	Notchlip redhorse	x
Scartomyzon rupiscartes	Striped jumprock	x
Centrarchidae	**Sunfishes**	
Lepomis auritus	Redbreast sunfish	x
Lepomis macrochirus	Bluegill	
Micropterus coosae	Redeye bass	x
Cottidae	**Sculpins**	
Cottus bairdii	Smoky sculpin	
Cyprinidae	**Carps and Minnows**	
Campostoma anomalum	Central stoneroller	x
Clinostomus funduloides funduloides	Rosyside dace	
Cyprinella nivea	Whitefin shiner	x
Hybopsis rubrifrons	Rosyface chub	x
Luxilus coccogenis	Warpaint shiner	x
Nocomis leptocephalus leptocephalus	Bluehead chub	x
Notropis leuciodus	Tennessee shiner	x
Notropis lutipinnis	Yellowfin shiner	x
Notropis spectrunculus	Mirror shiner	x
Rhinichthys atratulus	Blacknose dace	
Rhinichthys cataractae	Longnose dace	
Semotilus atromaculatus	Creek chub	
Ictaluridae	**Bullhead Catfishes**	
Ameiurus brunneus	Snail bullhead	x
Noturus insignis	Margined madtom	x
Noturus leptacanthus	Speckled madtom	
Percidae	**Perches**	
Etheostoma inscriptum	Turquoise darter	x
Salmonidae	**Trouts**	
Oncorhynchus mykiss	Rainbow trout	x
Salmo trutta	Brown trout	x
Salvelinus fontinalis	Brook trout	

The aquatic community includes one forest-listed Locally Rare fish species: *Notropis leuciodus.* The fish species diversity of the Management Indicator Community in the Chattooga River watershed has not changed in more than 20 years of sampling the main stem of the river (SCDNR unpublished data). NatureServe has assigned a Global Rank of either G4 (apparently secure) or G5 (secure) to all of the fish species in the community.

The SC Comprehensive Wildlife Conservation Strategy (Kohlsaat et al. 2005) ranks *Micropterus coosae* as highest conservation priority; *Cottus bairdii* and *Etheostoma inscriptum* as high conservation priority; and *Moxostoma collapsum*, *Campostoma anomalum*, *Hybopsis rubrifrons*, *Luxilus coccogenis*, *Notropis leuciodus*, *Notropis spectrunculus*, *Rhinichthys atratulus*, *Rhinichthys cataractae*, *Ameiurus brunneus* and *Salvelinus fontinalis* as moderate conservation priority.

Salvelinus fontinalis is ranked by the SC Natural Heritage Program as S2. Management efforts throughout the watershed have increased over the last decade to identify existing Southern brook trout populations, increase the species distribution and enhance habitat in brook trout streams. Most populations are now isolated in headwater tributaries. Brook trout restoration has been completed in one tributary and is planned in two additional tributaries in the Chattooga River watershed.

Ameiurus brunneus is listed as Vulnerable by the AFS (Jelks et al. 2008). This indicates that the species is in imminent danger of becoming threatened throughout all or a significant portion of its range due to present or threatened destruction, modification, or reduction of its habitat or range. The remaining fish species in the community are ranked as CS (currently stable) by the AFS (Warren et al. 2000).

Eversole et al. (2002) conducted crayfish surveys in the Chattooga River watershed. Crayfish species known to occur are listed in Table 3.2.2A-6.

Table 3.2.2A-6. Crayfish species that are known to occur in the Chattooga River watershed.

Scientific Name	Common Name
Cambarus asperimanus	Mitten crayfish
Cambarus bartonii	Common crayfish
Cambarus chaugaensis	Chauga crayfish
Procambarus spiculifer	White tubercled crayfish

The aquatic community includes one Forest Sensitive crayfish *Cambarus chaugaensis.* All other crayfish are rated as G4 or G5 by NatureServe and Currently Stable by AFS (Taylor et al. 2007). In addition, *Cambarus asperimanus* is ranked as S1 by the SC Natural Heritage Program, S2 by the GA Natural Heritage Program and S3? by the NC Natural Heritage Program.

The SC Comprehensive Wildlife Conservation Strategy (Kohlsaat et al. 2005) ranks *Cambarus chaugaensis* as highest conservation priority.

Alderman (2004) found three species of mussels during surveys in the Chattooga River: *Alasmidonta varicosa, Elliptio angustata* and *Elliptio producta*. In addition to the species reported by Alderman, Roghair et al. (2005) report finding a relic shell of *Elliptio complanata* in the Chattooga River (see Table 3.2.2A-7).

Table 3.2.2A-7. Mussel species that are known to occur in the Chattooga River watershed.

Scientific Name	Common Name
Alasmidonta varicosa	Brook floater
Elliptio angustata	Carolina lance
Elliptio complanata	Eastern elliptio
Elliptio producta	Atlantic spike

The aquatic community includes one Forest Sensitive mussel species: *Alasmidonta varicosa. Elliptio producta* has a global rank of G3 and is ranked as Special Concern by the AFS (Williams et al. 1992). *Elliptio angustata* has a global rank of G4 and is ranked as Special Concern by the AFS. *Elliptio complanata* has a global rank of G5 and is ranked as Currently Stable by the AFS.

The SC Comprehensive Wildlife Conservation Strategy (Kohlsaat et al. 2005) ranks *Alasmidonta varicosa* as highest conservation priority, and *Elliptio angustata, Elliptio complanata* and *Elliptio producta* as moderate conservation priority.

Alderman (2004) reports that *Alasmidonta varicosa, Elliptio angustata* and *Elliptio producta* were reproducing and have viable populations in the Chattooga River. Of the mussel species found on the Andrew Pickens Ranger District, the *Alasmidonta varicosa* population within the Chattooga River is of global significance. From Georgia through at least Maryland, this is the best extant population within this range (Alderman 2008). Until recently, surveys indicated that mussel populations were restricted to the section of the river from the vicinity of Highway 28 and downstream. Relic shells of *Elliptio* sp. were found during recent surveys 6.5 miles upstream of the Highway 28 bridge.

Aquatic insect surveys were conducted in the Chattooga River from 1986-89 by English (1990), in 2007-08 by English and Pike (2009), and in 1994 by Weber and Isely (1995). Weber and Isely conclude that water quality in the Chattooga River basin was good to excellent using macroinvertebrates as biological indicators of water quality. Analysis of macroinvertebrate data in the English 1990 report indicates the water quality in the Chattooga River watershed was good. The average density over the entire Chattooga River watershed suggested that the river was neither over nor under productive compared to streams in the Great Smoky Mountains National Park. Sites from the 1990 report were resampled in fall 2007 and 2008 (English and Pike 2009) and encompass sample sites from the headwaters downstream to just above Tugaloo Lake, including some tributaries.

A comparison of the combined data from the 1990 and 2009 reports for both sampling periods in the entire watershed, indicates that the upper segment of the Chattooga river area (upstream of Highway 28) had better water quality than the lower Chattooga River area and the tributaries. Taxa richness and diversity metrics in the 1990 report indicate better water quality throughout the watershed than in the 2009 report. This may be contributed to lower water discharges in 2007 than in 1989. When looking at differences among all watershed areas for both sampling periods, water quality was better in the tributaries during the 1990 report sampling period when compared to tributary water quality in the 2009 report sampling period; the upper segment of the Chattooga River had better water quality than the lower section of the river in the 2009 report sampling period; and most of the watershed had excellent or very good water quality for both sampling periods. Of all the watershed areas sampled for the 2009 report, the upper segment of the Chattooga River area had the highest taxa richness, diversity and ept index indicating the best water quality. The biotic index indicates that the lower Chattooga River area had the poorest water quality.

5. Aquatic Habitat

Stream habitat surveys using Basinwide Visual Estimation Technique (Dollof et al. 1993) were conducted in six South Carolina tributaries to the Chattooga River in 2001 and 2002. The total area of riffle habitat in these streams was 1.5 to 3.8 times greater than the total pool area. The lack of in-stream habitat complexity is in part associated with a low percentage of large woody debris within the streams. Presence of large woody debris classes considered large enough to be stable and create fish habitat ranged from one to 15 percent of the total wood surveyed within the streams. The larger, most stable, woody debris class (greater than five meters in length and 55 cm in diameter) ranged from one to seven percent of the total wood.

No complete habitat assessment has been conducted in the main channel of the Chattooga River or the proposed project area streams.

III. Existing Impacts to the Environment

This analysis addresses proposed activities that may contribute sediments or otherwise impact aquatic habitat or species. Fine sediments can alter and degrade aquatic habitats and eliminate benthic macroinvertebrates or reduce their density and diversity. This in turn decreases a food source for some aquatic species. Sedimentation can cause mortality in egg and larval stages of aquatic species reproduction. Sediments can fill in and destroy habitat niches within a stream. Van Lear et al. (1995) found that 80 percent of observable sediment sources in the Chattooga River watershed were associated with open graveled and unsurfaced roads. The use of these roads contributes to their degradation through heavy trafficking and by increasing the need for maintenance, both of which aggravate sedimentation. Van Lear (1995) also found that the wild and scenic corridor of the main stem Chattooga River contributes relatively little new sediment. Recreational trails and facilities accounted for 2.6 percent of the total number of sediment sources in the Chattooga River watershed during the study 16 years ago. Whittaker and Shelby (2007) suggest recreation use in the Chattooga Corridor is likely to increase approximately 20 percent over the next decade, increasing the use of roads, trails and campsites.

Species conservation status and known population trends and aquatic habitat conditions are discussed in the Affected Environment. The 2004 FEIS for the Sumter RLRMP acknowledges that effects to aquatic ecosystems do occur on a watershed scale and sediment has been determined to be a risk factor for aquatic species viability in the Chattooga River watershed. Trail erosion and sediment input and turbidity were identified as an existing impact issue on the river by Whittaker and Shelby (2007).

Large wood is an important component of the aquatic ecosystem. It provides habitat diversity for aquatic species by increasing pool habitats and providing cover and refuge. It also provides a substrate for macroinvertebrates and nutrients to the stream system. Removal of large wood may result in the loss of pool habitat and complexity and lower fish density, average size and biomass (Dolloff 1994). Substantial mortality of the Eastern hemlock is expected to provide increased amounts of large wood in the Chattooga River in the future. The Eastern hemlock is of great value as large wood due to slow decay and large size which promotes aquatic habitat stability and organic matter retention over a longer period of time. Once the hemlock component of the riparian corridor is gone, there are no other hemlocks to replace them. Overtime, recruitment of hemlock to the river will diminish. There is no other tree that will replace the aquatic habitat performance of hemlock within mountain stream systems.

IV. Environmental Consequences

Direct, indirect and cumulative impacts to aquatic resources in this analysis are based on the actions in the proposed alternatives and the future monitoring of those actions.

Determination of Direct and Indirect Effects Common to Alternatives 2 and 3

There are no federally listed aquatic species in the project area. *Alasmidonta varicosa*, a Forest Sensitive species, is known to occur near the project area in the Chattooga River. It is possible that *Cambarus chaugaensis, Beloneuria georgiana, Ophiogomphus edmundo* and *Macromia margarita* occur throughout the Chattooga River watershed. There would be no impacts to these Forest sensitive species or the aquatic community from the farmstead activities in the Chattooga River. Direct impacts may occur to individuals of the aquatic community in the project area streams through mortality from culvert placement and through mortality of egg and larval stages from sediment. Indirect impacts may occur to the aquatic community in the project area streams through habitat loss from sediment input overtime and decrease of large wood recruitment for habitat complexity; and through changes in water quality from livestock waste and decreased shading within the standard riparian corridor. Given the species occurrence ranges and the abundance of habitat across the species ranges; project activities are not likely to cause a trend toward federal listing or a loss of viability.

A. Alternative 1 – Direct and Indirect Effects

There would be no direct or indirect impacts to the aquatic community under the no action alternative. The aquatic community would remain in the present state or continue any current population trends.

B. Alternative 2 – Direct and Indirect Effects

Alternative 2 proposes the establishment of a living history interpretive site on approximately seven acres of the 21.6 acre project site. Activities associated with the establishment of the site include:

1. Vegetation and Timber Removal
2. Crop Fields and Livestock Pastures
3. Modern Vault Toilets Installation and Septic System
4. Road, Trail, Parking Lot and Ditch Construction
5. Springhouse Restoration
6. Power Line Relocation
7. Chemical Treatments

Restoring the historic farm landscape would involve removing trees and understory vegetation and establishing grasses, low shrubs, gardens and agricultural crops. Additional land disturbance would come from building construction, relocating a power line, road improvements and building a parking lot. In addition, livestock would be corralled or tethered within the farm landscape. Connected actions associated with the initial construction would include logging to remove trees that have grown up across the site, skid trails, log decks and temporary roads. Some of the restoration work and some of the farmstead activities would take place within the Chattooga River 100-year floodplain as identified on Federal Emergency Management Agency (FEMA) floodplain maps. Removing vegetation exposes bare soil, increasing the potential for sedimentation of streams; decreases the available recruitment of large woody debris to the stream system; and reduces shade along streams in the proposed project area.

A non-significant Forest Plan amendment (Amendment #2) is included as part of this decision and would reduce standard riparian corridor widths (as defined in the RLRMP) from 100 feet to a 40-foot buffer width along either side of perennial and intermittent streams, seeps, springs and man-made ditches for this project area only. These buffer widths are equivalent to streamside management zones as defined in *South Carolina's Best Management Practices for Forestry* (BMPs). Construction and some vegetation clearing would be allowed within this 40 foot zone.

Direct and indirect impacts that may occur from these activities include sedimentation and turbidity from soil and stream disturbance. Sedimentation can cause direct mortality in egg and larval stages of aquatic species reproduction. Indirectly, sediments can fill in and destroy habitat niches within a stream. Initial vegetation removal and ground-disturbing activities would create short-term impacts. Soil disturbing activities within RLRMP standard riparian corridors following initial activities could create long-term impacts. Project specific design criteria designates that no ground-disturbing activities would be permitted within 200 feet of the Chattooga River with the possible exception of a portion of the parking area. Sediment impacts to the Chattooga River from soil disturbance in the proposed project area during periodic river flooding would be reduced by the no

disturbance zone along the river. From the Water Quality section 3.2.2 of this EA, "There is likely to be temporary sediment input to project area streams from initial project activities as well as intermittent sediment input for the long term. The amount of sediment delivery is expected to be minimal due to the low gradient of the site. There would be possible instream sediment and possible aquatic habitat impacts to the project area streams. These impacts are not expected to occur downstream in the Chattooga River." In addition, direct and indirect impacts may occur to water quality and aquatic habitat as discussed below.

1. Vegetation and Timber Removal

Logging would occur to restore the original farm landscape. RLRMP standards and guidelines, proposed Amendment #2 and BMPs for forestry activities would be applied to all activities associated with this project. At a minimum, stream zones would extend 25 feet either side of channeled ephemeral streams (RLRMP). Channeled ephemeral stream zones and riparian corridors are managed for large woody debris recruitment. Removal of large woody debris is determined on a case-by-case basis and would include interdisciplinary input. Logging slash would not be placed in streams (FW-13; FS 11.-2). Amendment #2 specifies a minimum width of 40 feet for perennial and intermittent streams. Minimum widths for perennial streams, lakes, ponds and wetlands are associated with slope class. Under Amendment #2, at 0-30% slope, the minimum width is 40 feet; at 31-45%, 125 feet; and at 46+%, 150 feet. For intermittent streams, the minimum widths associated with these slope classes are 40 feet, 75 feet and 100 feet respectively. The changes in the buffer widths would reduce Forest Plan Riparian Corridor acreage in the proposed project area from 7.7 acres to 4.9 acres. Also under Amendment #2, approximately 50 square feet of basal area in overstory trees would be retained within the primary streamside management zone (40 feet) and no trees would be removed if less than 50 square feet of overstory basal area per acre exists.

BMPs for forestry activities would reduce soil erosion and sediment delivery to streams. Leaving a portion of the overstory trees within the 40-foot streamside zone would provide bank stability and some shade to the streams. Some increases in stream temperature might be experienced within the small streams as a percentage of shade is removed within the RLRMP standard riparian corridor to accommodate some activities. Large wood and leaf litter recruitment would be decreased with the loss of the standard riparian corridor width.

2. Crop fields and livestock pastures

Long-term soil disturbance associated with crop fields and livestock pasture could be ongoing sources of sediments. Crop fields and livestock pasture would be located within RLRMP standard riparian corridors. Ground disturbance in the crop fields would be limited to periods of minimal rainfall but would remain a source of sediment if not revegetated immediately over the entire disturbance. Extensive river flooding would also capture disturbed soils from the crop fields.

Project specific design criteria to reduce sediment impacts associated with crop fields are as follows:

a. Areas regularly cultivated would be on slopes of four percent or less to limit erosion and sediment input to streams.
b. Contour plowing, leaving vegetated strips and other stabilization measures would be used to reduce erosion and sediment input to streams on areas that are over four percent.
c. Tillage of soils in the crop fields would be limited to periods of minimal rainfall to minimize soil runoff.
d. Crops would be planted immediately after soil disturbance.

These criteria were designed to reduce sediment impacts.

Water quality in the unnamed tributary may be impacted from livestock waste with rain and flooding events. This would indirectly impact the aquatic community through enrichment of water that causes changes in the community structure, losing some species replaced by more tolerant species over time. It is expected that the impact to the aquatic community would be less in the Chattooga River which has greater flow and higher dilution capabilities. From the Water Quality section 3.2.2 of this EA, "Some temporary or intermittent increases in fecal coliform and nutrients may be associated with the livestock if stormwater is not adequately contained or the vegetated buffers maintained. These increases, if present would be primarily on-site and no measured change would be noticed in the Chattooga River."

Project specific design criteria to reduce water quality impacts associated with livestock are as follows:

a. Fencing in the form of pens and corrals would be used to keep livestock out of streams, ditches, seep areas and the river.
b. Water sources for livestock would be approved by the Andrew Pickens District Ranger with consultation from the Forest aquatic biologist and hydrologist.

3. Modern Vault Toilets Installation and Septic System

It is unknown where the existing septic tank is located at the caretaker housing site. If it is located or relocated close to the unnamed tributary, leaching from the septic tank may filter to the stream further impacting water quality and the aquatic community. The vault toilets would be located outside of the Chattooga River 100-year floodplain as identified on FEMA floodplain maps.; therefore should not be subject to river flooding that would result in contamination of river waters. Also, from the Water Quality section, "The caretaker's septic system and modern vault toilets should have no detectable impacts on fecal contaminants in the streams or the Chattooga River".

Project specific design criteria to reduce water quality impacts associated with waste disposal are as follows:

a. All buildings and vault toilets would be located outside of the Chattooga River floodplain (Zone A) as identified on Federal Emergency Management Agency (FEMA) maps.
b. The water well and septic system at the caretaker's residence would meet state and county code requirements.

4. Road, trail, parking lot and ditch construction

A portion of the parking lot would be located within the riparian corridor. River flooding could capture sediments and gas and oil residues from the parking area. From the Water Quality section 3.2.2 of this EA:

> Pollutants from the roads, parking facility, residence and other improvements would in most circumstance be undetectable or minor. The intent would be for any pollutant excessive leaks or spills to be contained and removed. There is minor potential, but some small risk of pollutants from roads, parking and other motorized public use areas. Soils would in most cases absorb, contain and filter contaminants and aid in their breakdown through bacterial or other means. In addition, although not a desired means of pollutant abatement, absorption and dilution is available in the tributaries and river flow and substrates.

Habitat loss may occur upstream of new culverts or culvert replacements where aquatic organism passage may be impeded. Up to four stream crossings would be constructed. If culverts are removed, stream banks and channels must be restored to natural size and shape. All disturbed soil must be removed and stabilized (FS 11.-23). New stream crossings would be evaluated and, where necessary, constructed so that they do not adversely impact the passage of aquatic organisms (FS 11.-8). Temporary and permanent stream fords would not be used as crossings. Fords would create a long-term source of sediment to area streams and the Chattooga River. Temporary stream crossings can include fords or undersized culverts which are removed at a later date, disturbing the stream channel more than once and impeding aquatic passage. Initial project activities would include temporary spanning structures over streams for the placement of farm buildings. Roads may also be widened which would increase sediment input to streams, decrease available in stream habitat and decrease riparian vegetation.

In addition to RLRMP standards, there are project specific design criteria to reduce sediment impacts associated with the stream crossings and road construction:

a. Any new culverts and culvert replacements would allow for aquatic organism passage where deemed appropriate by the aquatic biologist.
b. Erosion and sediment control practices, including but not limited to erosion control fencing, would be used to reduce sediment input to streams during construction and reconstruction activities. These would be maintained until vegetation is established and stable.
c. No more than four stream crossings (stagecoach road and crop field access) would be constructed. These crossings would be installed to limit sediment input during construction and use.
d. Fords would not be used. Temporary spanning structures and spot placement of gravel on road surfaces would be required during all initial construction activities and set-up of buildings to protect the road surface and to minimize soil erosion and sediment input to streams.
e. Drainage structures would be used to reduce concentrated water flow from roads and trails and disperse it into forested areas. These criteria were designed to reduce sediment impacts.

Possible drainage and ditching structures may be installed associated with the unnamed tributary. Specific locations for these activities have yet to be identified. Project specific design criteria to reduce sediment impacts associated with drainage and ditching structures is as follows:

- Any ditching or drainage structures associated with the stream would be reviewed by the Forest aquatic biologist, hydrologist and soil scientist prior to any disturbance.

5. Springhouse restoration

Springhouse restoration would be accomplished without the use of wet concrete. Wet concrete causes the direct and immediate mortality of aquatic life through the alteration of stream pH.

Project specific design criteria to reduce water quality impacts associated with the springhouse restoration are as follows:

1. Existing springs or seeps would not be altered.
2. No wet concrete would be used in the restoration of the springhouse.

6. Power line relocation

A power line is located adjacent to Highway 28 and through the project area. Power poles would be removed from within the project area and relocated in the Highway 28 right of way. The power line corridor crosses project area streams and then enters the Chattooga River floodplain, where wet soil conditions exist. The natural re-vegetation of the Chattooga River floodplain where the power line corridor is located would be beneficial to the river system.

Project specific design criteria to reduce sediment impacts from power line relocation are as follows.

a. Design criteria associated with the stream crossings and road construction as listed above under Road, Trail, Parking Lot and Ditch Construction would also apply to power line relocation access.
b. Bare areas that are subject to erosion would be seeded and mulched to minimize erosion.
c. Removal of power poles in the Chattooga River floodplain would only occur during dry conditions and with minimal soil disturbance by equipment. The power line corridor within the Chattooga River floodplain would be allowed to revegetate and function as a riparian corridor once the power poles are removed.

7. Chemical Treatments

Fertilizers

The project proposal does not include the use of fertilizers initially or in the future in the project area.

Insecticides

No direct, indirect or cumulative impacts are expected from the nominal and periodic use of household insecticides used for the control of insects such as ants, termites, fleas, etc.

Insecticides would not be used on livestock on the farmstead site. Insecticide use would be limited to buildings for the control of termites and other pests. ***Application of insecticides would follow the RLRMP standards and guidelines for herbicides listed below.*** The project proposal does not include insecticide application methods or rates.

Project specific design criterion to reduce water quality impacts associated with the use of insecticides is as follows:

- Treatment of livestock would occur offsite prior to livestock transport to the farmstead.

Herbicides

Direct mortality may occur from the use of herbicides. Herbicide application would occur in the initial phases of vegetation removal using glyphosate and as needed on seven acres over a one to five year period. The glyphosate formulation, Accord or an equivalent, would be used as direct foliar spray at a 5-8% solution and as a stem/stump treatment at a 50% solution. Herbicide application would follow the Final Environmental Impact Statement for Vegetation Management in the Appalachian Mountains and the RLRMP (Channeled Ephemeral Stream Zones Standards and Riparian Corridor Standards). It is possible that herbicides may be used within the Chattooga River floodplain outside of the Amendment #2 200 foot buffer width.

Glyphosate is strongly absorbed to soil particles, which limits its movement into aquatic environments. It is unlikely to enter waters through surface or subsurface runoff, except when the soil itself is washed away by runoff. Most glyphosate found in waters likely results from runoff from vegetation surfaces, spray drift and direct overspray. In water, glyphosate is rapidly dissipated through absorption to suspended and bottom sediments where it persists until degraded by microbes with a half-life of 12 days to 10 weeks. The technical grade of glyphosate is of moderate toxicity to fish (http://tncweeds.ucdavis.edu/handbook.html) and slightly toxic to aquatic invertebrates. The 96 hour LC50 is 120 mg/l in bluegill sunfish and 86 mg/l in rainbow trout. LC50 is defined as the concentration of a chemical, which kills 50% of a sample population in laboratory testing in a specified amount of time. No freshwater mollusk information is available, but the 96 hour LC50 is 10 mg/l for Atlantic oysters. The 48 hour LC50 for *Daphnia magna* (aquatic crustacean) is 780 mg/l. The toxicity of different formulations of glyphosate vary. Accord is permitted for use in aquatic environments. There is a very low potential for glyphosate to build up in the tissues of aquatic invertebrates or other aquatic organisms (http://extoxnet.orst.edu).

An adjuvant is any compound (including surfactants) that is added to an herbicide formulation or tank mix to facilitate the mixing, application, or effectiveness of that herbicide. There is little information on the effects of adjuvants to aquatic systems. Some adjuvants have the potential to be mobile and pollute surface or groundwater sources. The use of adjuvants near water may have adverse effects in some aquatic species (http://tncweeds.ucdavis.edu/handbook.html). The adjuvant Cide-Kick would be used for the herbicide applications in the proposed project area. The active ingredient of this adjuvant is d-limonene, a byproduct of the citrus industry. The formulated product is practically nontoxic to freshwater fish and slightly toxic to freshwater invertebrates on an acute basis (http://www.epa.gov/pesticides/reregistration/REDs/factsheets/3083fact.pdf).

RLRMP standards and guidelines and BMPs for forestry activities would be applied to all activities associated with this project. For all herbicide applications, the following forest-wide standards apply:

a) Application equipment, empty herbicide containers, clothes worn during treatment and skin are not cleaned in open water or wells.
b) Mixing and cleaning water must come from a public water supply and be transported to the site (FW-47).
c) Herbicide mixing, loading, or cleaning areas are not located within 200 feet of private land, open water or wells or other sensitive areas (FW-48).
d) Weather is monitored and the proposed project is suspended if temperature, humidity or wind becomes unfavorable as described (FW-42).
e) Herbicides and application methods are chosen to minimize risk to human and wildlife health and the environment (FW-40).
f) Standard riparian corridor minimum widths for perennial streams, lakes, ponds and wetlands are associated with slope class.
g) For herbicide use, at 0-30% slope, the minimum width is 100 feet; at 31-45%, 125 feet; and at 46+%, 150 feet.

In addition to RLRMP standards, there are project specific design criteria to reduce impacts to water quality associated with herbicide use:

a) Use of herbicides would be limited to periods of minimal rainfall to avoid runoff and would not occur within 100 feet of seeps, springs, streams or 200 feet of the Chattooga River.
b) Only herbicides labeled for aquatic use would be used.
c) Adjuvant products (d-limonene) with the least impact on aquatic organisms would be used for the herbicide applications.

These criteria were designed to reduce water quality impacts.

C. Alternative 3 – Direct and Indirect Effects

Proposed activities under Alternative 3 remain the same as those under Alternative 2, except that only one building would be relocated.

D. Alternative 1 – Cumulative Effects

There would be no cumulative impacts to the aquatic community under the no action alternative.

E. Alternatives 2 and 3 – Cumulative Effects

Under the 2004 Sumter RLRMP, a Watershed Condition Rank was assigned to 5th level watersheds across the forest. The Chattooga River watershed (Tugaloo Reservoir to headwaters) received a rank of Below Average in comparison to other watersheds on the forest, which denotes that the potential to adversely affect aquatic resources is high on a scale of low, moderate and high. Forest objectives in high-ranked watersheds include maintaining and improving aquatic health through the implementation of the Riparian Corridor Prescription, conducting watershed assessments at the proposed project level, pre-project monitoring efforts to determine biota health, and maintaining and restoring watershed health and aquatic systems on a project level. Sediment was determined to be a risk factor for aquatic species viability in the Chattooga River watershed.

The 2004 FEIS for the Sumter National Forest LRMP also addresses Watersheds and Aquatic Habitats. This section of the FEIS recognizes that while direct and indirect adverse effects to aquatic communities are minimized by the Riparian Corridor Prescription and the Forest Wide Direction standards, these effects are not eliminated from the entire watershed. The LRMP FEIS analysis of Aquatic Viability is based on present LRMP standards. The Aquatic Viability Outcome for the aquatic Region 8 Sensitive species is that they are potentially at risk from sediment in the Chattooga River watershed; however, the U.S. Forest Service may influence conditions in the watershed to keep the species well distributed. Therefore, likelihood of maintaining viability is moderate. Forest objectives listed above associated with the Watershed Condition Rank were designed to eliminate this risk.

A list of past, present and reasonably foreseeable activities is listed in Table 3.1-1. Each of these projects has been or would be analyzed for impacts to aquatic resources and design criteria will be implemented to minimize impacts where needed. The Riparian Corridor Management Prescription addressing perennial and intermittent streams and the Forestwide Standards specific to ephemeral channels would be implemented for all these projects. In addition to Forest activities, private land activities occur within the watershed. There are private homes, apple orchards and pastures.

3.2.2B WILDLIFE

I. SUMMARY OF FINDINGS

The Chattooga River watershed has a geology and climate that is unique in the Southern Appalachians. As outlined in the wildlife component of the Biology ORV in the 1971 Wild and Scenic River Study Report and the 1996 ORV Report, more than 130 species either occur or have the potential to occur in the Chattooga River watershed.

The proposed Southern Appalachian Farmstead project occurs within the Chattooga River watershed and is located on approximately 22 acres at the existing Russell Farm Historic Site on Highway 28. The proposed project area is immediately adjacent to the Chattooga River and is characterized by grassy openings that are mowed on a regular basis, riparian forests, some mixed hardwood-pine habitats and planted eastern white pine (*Pinus strobus*). Giant cane (*Arundinaria gigantean*) is common in the riparian areas adjacent to the Chattooga River. The portion of the power line right-of-way that exists in the proposed project area is maintained by mowing and/or brush cutting by the utility company. The proposed project area has a history of human habitation, agriculture and other disturbance.

Because of its location within the Chattooga River watershed, analysis of the proposed action includes consideration of those wildlife species and habitats that occur not just on the Sumter National Forest (South Carolina), but also those that occur on the Chattahoochee National Forest (Georgia). Because of the relatively small size and scope of the proposed project, and because of the distance of the proposed project area to North Carolina, wildlife species and habitats that occur on the Nantahala National Forest are not considered in this analysis.

All locally rare[5] and sensitive wildlife species that are located on the Chattahoochee and Sumter national forests and occur within the Chattooga River watershed are considered in this analysis[6]. All management indicator species (MIS) for the Chattahoochee and Sumter national forests were also considered, as well as all priority migratory birds located within the Appalachian Mountain Bird Conservation Region (BCR 28). Using a step-down process, species and potential habitats in the proposed Southern Appalachian Farmstead project area were identified by:

1. Evaluating the location and nature of the proposed project,
2. Considering the species' range, life history, and available habitat information, and
3. Reviewing District records of known rare, proposed, and federally threatened species occurrences.

[5] A list of locally rare species is recognized by the Chattahoochee National Forest. While the Sumter National Forest does not keep a list of locally rare species, all species on the Chattahoochee National Forest list are considered for the proposed Southern Appalachian Farmstead project.

[6] There are no federally proposed, candidate, threatened, or endangered vertebrate or invertebrate wildlife species or habitats that occur within the Chattooga River watershed on the Chattahoochee and Sumter National Forests.

Six locally rare species, seven sensitive species, 11 MIS and seven priority migratory birds are known to occur or have potential habitat in the proposed Southern Appalachian Farmstead project area. Table 3.1.2B-1 lists the wildlife species analyzed for this project.

Table 3.1.2B-1 Summary of locally rare wildlife species, sensitive wildlife species, MIS and priority migratory bird species that are known to occur or have potential habitat in the proposed Southern Appalachian Farmstead project area, including surrounding areas within the Chattooga River watershed on the Chattahoochee and Sumter national forests.

Type	Common Name	Scientific Name	Status
Amphibian	Hellbender	*Cryptobranchus alleganiensis*	Locally Rare
Bird	Acadian Flycatcher	*Empidonax virescens*	MIS
Bird	Northern Bobwhite Quail	*Colinus virginianus*	MIS
Bird	American Woodcock	*Scolopax minor*	MIS
Bird	Bald Eagle	*Haliaeetus leucocephalus*	Sensitive
Bird	Brown Thrasher	*Toxostoma rufum*	Priority Migratory Bird
Bird	Cedar Waxwing	*Bombycilla cedrorum*	Locally Rare
Bird	Common Raven	*Corcus corax*	Locally Rare
Bird	Eastern Towhee	*Pipilo erythrophthalmus*	Priority Migratory Bird
Bird	Eastern Wild Turkey	*Meleagris gallopavo*	MIS
Bird	Field Sparrow	*Spizella pusilla*	MIS, Priority Migratory Bird
Bird	Golden-crowned Kinglet	*Regulus satrapa*	Locally Rare
Bird	Hooded Warbler	*Wilsonia citrina*	MIS
Bird	Indigo Bunting	*Passerina cyanea*	Priority Migratory Bird
Bird	Loggerhead Shrike	*Lanius ludovicianus*	Priority Migratory Bird
Bird	Northern Flicker	*Colaptes auratus*	Priority Migratory Bird
Bird	Pileated Woodpecker	*Dryocopus pileatus*	MIS
Bird	Prairie Warbler	*Dendroica discolor*	MIS
Bird	Red-breasted Nuthatch	*Sitta canadensis*	Locally Rare
Bird	Swainson's Warbler	*Limnothlypis swainsonii*	MIS
Bird	Winter Wren	*Troglodytes troglodytes*	Locally Rare
Bird	Yellow-breasted Chat	*Icteria virens*	Priority Migratory Bird
Butterfly	Diana Fritillary	*Speyeria diana*	Sensitive
Crayfish	Chauga Crayfish	*Cambarus chaugaensis*	Sensitive
Dragonfly	Edmund's Snaketail	*Ophiogomphus edmundo*	Sensitive
Freshwater Mussel	Brook Floater	*Alasmidonta varicosa*	Sensitive
Mammal	Black Bear	*Ursus americanus*	MIS
Mammal	Eastern Small-footed Bat	*Myotis leibii*	Sensitive
Mammal	Rafinesque's Big-eared Bat	*Corynorhinus rafinesquii*	Sensitive
Mammal	White-tailed Deer	*Odocoileus virginianus*	MIS

Under Alternative 1, the No Action Alternative, there would be no direct, indirect or cumulative effects on locally rare wildlife species, sensitive wildlife species, MIS or priority migratory bird species.

Under Alternative 2, there would be no direct, indirect or cumulative effects to all locally rare and sensitive avian species, all MIS and all priority migratory birds. If locally rare or sensitive bird species MIS, or priority migratory birds were present during project activities, disturbance would simply cause them to relocate to undisturbed areas. Project activities would not substantially affect habitat quality or availability for avian species.

There would also be no direct effects to locally rare and sensitive aquatic species under Alternative 2. There would be no in-stream work in the Chattooga River that would crush or otherwise directly harm these species, and project design criteria, Forest Plan standards and guidelines, and South Carolina Best Management Practices (BMPs) would protect individuals from the direct effects of sedimentation or herbicide pollution. There may be effects to aquatic habitats under Alternative 2. Sedimentation, turbidity, altered water quality, and changes in aquatic community structure could result from project activities; however, project design criteria, Forest Plan standards and guidelines, and South Carolina BMPs would substantially reduce or eliminate these potential adverse effects. Additional information is found in section 3.2.2A, Fisheries.

Under Alternative 2, the proposed action, there may be direct and indirect effects on the two sensitive bat species. It is possible that project activities may adversely affect winter or summer roost trees and result in the loss of roost availability and injury or death of one to several individuals. These effects may impact individuals, but are not expected to affect the long-term viability of the species.

There would be no cumulative effects to locally rare wildlife species, sensitive wildlife species, MIS or priority migratory bird species with the implementation of Alternative 2.

The direct, indirect, and cumulative effects of Alternative 3 would be the same as determined under Alternative 2.

II. Affected Environment

A. Condition at Time of Designation

The 1971 Study Report describes the Chattooga wildlife as:

> varied and serves different interests. Game animals provide hunting, and these, plus the non-game animals, are also available for scientific study. The Highlands Biological Station at Highlands, N.C. considers the Chattooga River area a rich study area and one of the last remaining primitive river environments in the Southeast. The many species of birds provide ample opportunity for nature photography and bird watching.

The 1971 Study Report discusses opportunities for hunting and notes, “the terrain immediately adjacent to river is generally rugged and steep and is somewhat unproductive in terms of animal numbers produced but offers a challenging type of big game hunting.” Only two areas within the Chattooga River drainage are considered “suitable for small game management. These include the flat bottomlands in the vicinity of Highway 28 Bridge and the old fields on the extreme headwaters near Cashiers.”

Common game species and their habitats within the Chattooga River drainage that are described in the 1971 Study Report include: deer, bear, turkey, grouse, squirrel, rabbit, quail and raccoon. Deer and bear are reported as scarce throughout the drainage. Turkey are reported as "present in huntable numbers…but no areas contain them in sufficient numbers to provide top notch hunting." Grouse hunting "ranges from fair to excellent, but habitat…is only fair in most areas due to a lack of openings in the forest canopy." Good squirrel hunting is "available in scattered oak-hickory stands throughout the drainage." Rabbit and quail hunting is "incidental due to a lack of farmland cultivation." Raccoon hunting is "popular in all three States and is good near farmlands adjacent to the Chattooga."

The 1971 Study Report also notes that waterfowl "are migratory birds and occasionally are present in huntable numbers…Beaver, muskrat, mink, fox, bobcat, and opossum are all present along the Chattooga River drainage in numbers high enough that local people occasionally trap or hunt them for sport or fur."

The 1971 Study Report also briefly mentions some uncommon species found in the Chattooga River drainage:

> Several species of small mammals reach the southern limit of their natural range in the Chattooga River. Animals like the masked shrew and woodland jumping mouse are more commonly found at higher latitudes. Some species of salamanders, a small-lizard-type, are found only in the general area of the Chattooga River and its tributaries.

The 1971 Study Report also discusses poisonous insects and reptiles commonly found in the Chattooga River drainage:

> Potentially dangerous insects and snakes normally encountered in this area include the following: Timber Rattlesnake, Copperhead, Yellow Jackets, Hornets, Honeybees, Stinging Caterpillars (various species). These insects and snakes are encountered only occasionally and are considered a natural part of the environment. They usually bite or sting only when threatened and seldom or never build up in numbers to dangerous proportions…No measures should be used to control them.

B. 1996 ORV Report

The 1996 ORV Report updated information from the 1971 Study Report and notes that deer are present in all sections even though habitat is not ideal. The 1971 Study Report states that bear were uncommon, but the 1996 ORV Report notes that, at the time, current studies indicated "bears are much more common than previously thought in this area."

Habitat is fair for turkey because "of the lack of openings in the forest canopy. Grouse can be found, but are declining in numbers. Squirrel, rabbit, quail, raccoon, waterfowl, as well as several other game species are present within the corridor."

Nongame species were not discussed in depth in the 1971 Study Report. The 1996 ORV Report remarks that since 1971, "several studies have been conducted which increase the knowledge available for the entire watershed. Over 150 investigations of birds, fish, mammals, reptiles and amphibians are known to have been conducted." The 1996 ORV Report further clarifies that "the Chattooga Project initiated research on mollusks, small mammals, reptiles and amphibians…There are several wildlife species within the Chattooga watershed that are considered sensitive species by Federal and state agencies."

C. Conditions as They Exist Today

The geology and climate in the Chattooga River watershed is unique in the Southern Appalachians; therefore, the area provides suitable habitats for several wildlife species which are listed as "state rare" or altogether "globally rare." Some of the most important and unique habitat components for rare wildlife species within the watershed include: exposed rock outcrops; deep, narrow gorges and associated vertical rock walls; steep, exposed, rocky forested slopes; and sheltered riparian corridors. These unique geologic features and habitats, combined with an average annual rainfall which can exceed 100 inches in some areas, provide a full spectrum of important and unique wildlife habitats. These unique features are mostly associated with the upper portion of the watershed. For this reason, approximately 70% of all rare species known to occur or those that have the potential to occur in the Chattooga River watershed are restricted to the upper portion of the watershed (above Highway 28 Bridge).

Habitat within the proposed Southern Appalachian Farmstead project is characterized by grassy openings that are mowed on a regular basis, riparian forests, some mixed hardwood-pine habitats, and planted eastern white pine (*Pinus strobus*). Giant cane (*Arundinaria gigantean*) is common in the riparian areas adjacent to the Chattooga River. The portion of the power line right-of-way that exists in the proposed project area is maintained by mowing and/or brush cutting by the utility company. The proposed project area has a history of human habitation, agriculture, and other disturbance.

1. Locally Rare and Sensitive Wildlife Species

Table 3.1.2B-2 lists 23 locally rare and 16 sensitive wildlife species that occur within the Chattooga River watershed. Of these, only six locally rare and seven sensitive species are known to occur or have potential habitat within the proposed Southern Appalachian Farmstead project area. All other species listed in Table 3.1.2B-2 are excluded from further analysis because they lack habitat within the proposed project area and because the proposed actions would not impact known populations or known habitats.

Table 3.1.2b-2 Locally rare and sensitive wildlife species of the Chattooga River Watershed, and project-level analysis for the proposed Southern Appalachian Farmstead project. Forest = Chattahoochee (CNF), Sumter (SNF). Reason for including or not including in analysis: 1 = Species is known to occur within project area; 2 = Species is not known to occur within project area but suitable habitat exists; 3 = Species is not known to occur within project area and suitable habitat does not exist.

Type	Scientific Name	Common Name	Forest	Status	Analyzed? / Reason
Amphibian	*Aneides aenus*	Green Salamander	CNF	Locally Rare	NO / 3
Amphibian	*Plethodon teyahalee*	Southern Appalachian Salamander	CNF/SNF	Sensitive/Sensitive	NO / 3
Amphibian	*Urspelerpes brucei*	Patch-nosed Salamander	CONF/SNF	Sensitive/Sensitive	NO / 3
Amphibian	*Hemidactylium scutatum*	Four-toed Salamander	CNF	Locally Rare	NO / 3
Amphibian	*Cryptobranchus alleganiensis*	Hellbender	CNF	Locally Rare	YES / 2
Beetle	*Cicindela ancocisconensis*	Appalachian Tiger Beetle	CNF	Sensitive	NO / 3
Beetle	*Cicindela patruela*	Barrens Tiger Beetle	CNF	Sensitive	NO / 3
Bird	*Dendroica cerulea*	Cerulean Warbler	CNF	Locally Rare	NO /3
Bird	*Empidomax minimus*	Least Flycatcher	CNF	Locally Rare	NO / 3
Bird	*Empidomax trailii*	Willow Flycatcher	CNF	Locally Rare	NO / 3
Bird	*Sitta canadensis*	Red-breasted Nuthatch	CNF	Locally Rare	YES / 2
Bird	*Aimophila aestivalis*	Bachman's Sparrow	CNF/SNF	Sensitive/Sensitive	NO / 3
Bird	*Falco peregrinus*	Peregrine Falcon	CNF	Sensitive	NO / 3
Bird	*Haliaeetus leucocephalus*	Bald Eagle	CNF/SNF	Sensitive/Sensitive	YES / 2
Bird	*Lanius ludovicia migrans*	Migrant Loggerhead Shrike	CNF/SNF	Sensitive/Sensitive	NO / 3
Bird	*Bombycilla cedrorum*	Cedar Waxwing	CNF	Locally Rare	YES / 2
Bird	*Corvus corax*	Common Raven	CNF	Locally Rare	YES / 2
Bird	*Loxia curvirostra*	Red Crossbill	CNF	Locally Rare	NO / 3
Bird	*Pheucticus ludovicianus*	Rose-breasted Grosbeak	CNF	Locally Rare	NO / 3
Bird	*Regulus satrapa*	Golden-crowned Kinglet	CNF	Locally Rare	YES / 2
Bird	*Troglodytes troglodytes*	Winter Wren	CNF	Locally Rare	YES / 2
Bird	*Vermivora chrysoptera*	Golden-winged Warbler	CNF	Locally Rare	NO / 3
Bird	*Wilsonia canadensis*	Canada Warbler	CNF	Locally Rare	NO / 3
Butterfly	*Speyeria diana*	Diana Fritillary	CNF SNF	Sensitive/Sensitive	YES / 2
Crayfish	*Cambarus chaugaensis*	Chauga Crayfish	CNF/SNF	Sensitive/Sensitive	YES / 2
Dragonfly	*Ophiogomphus edmundo*	Edmund's Snaketail	CNF SNF	Sensitive/Sensitive	YES / 2
Freshwater Mussel	*Alasmidonta varicosa*	Brook Floater	CNF/SNF	Sensitive/Sensitive	YES / 1
Mammal	*Myotis leibii*	Eastern Small-footed Bat	CNF/SNF	Sensitive/Sensitive	YES / 2
Mammal	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	CNF/SNF	Sensitive/Sensitive	YES / 2
Mammal	*Myotis austroriparius*	Southeastern Bat	CNF	Sensitive	NO / 2
Mammal	*Neotoma floridana haematoreia*	Southern Appalachian Woodrat	CNF	Locally Rare	NO / 3
Mammal	*Sorex dispar*	Long-tailed Shrew	CNF	Locally Rare	NO / 3
Mammal	*Tamiasciurus hudsonicus*	Red Squirrel	CNF	Locally Rare	NO / 3
Mammal	*Sorex palustris punctulatus*	Southern Water Shrew	CNF	Sensitive	NO / 3
Mammal	*Condylura cristata*	Star-nosed Mole	CNF	Locally Rare	NO / 3
Mammal	*Mustela nivalis*	Least Weasel	CNF	Locally Rare	NO / 3
Mammal	*Sylvilagus obscurus*	Appalachian cottontail	CNF	Locally Rare	NO / 3
Reptile	*Pituophis melanoleucus*	Northern Pine Snake	CNF	Locally Rare	NO / 3
Reptile	*Eumeces anthracinus*	Coal Skink	CNF	Locally Rare	NO / 3

a. Hellbenders

Hellbenders are among the largest amphibians in South Carolina and Georgia. They live in medium-sized to relatively large streams with cold, clear water and a rocky bottom, usually in water about 12-24 inches deep. Hellbenders are susceptible to habitat deterioration through siltation, pollution, thermal variations in microclimate and impoundments. Protection of large streams from siltation and pollution is necessary to preserve this species. Parts of the Chattooga River provides suitable habitat for hellbender.

b. Red-breasted nuthatch

This species is an uncommon winter resident in the Chattooga River watershed within the Chattahoochee and Sumter national forests. Red-breasted nuthatch is more likely to use habitats within these Forests during its spring and fall migrations. During winter it uses coniferous woods and is rarely observed in hardwoods. It is possible that red-breasted nuthatch could use the planted white pine and other habitats within the proposed Southern Appalachian Farmstead project area as wintering or migratory stop-over habitat.

c. Bald eagles

Bald eagles nest in tall, usually living trees near open bodies of water. They almost always forage near estuaries, lakes, ponds, rivers, open marshes and shorelines. Bald eagles soar over a body of water and swoop to the surface for fish. They also scavenge for dead fish and other carrion along shores and occasionally consume small birds and mammals. Although nationwide recovery efforts led to the removal of bald eagle from the Threatened and Endangered Species List in 2007, this bird is still protected under the Bald and Golden Eagle Protection Act (16 USC 668-668c, as amended). There are no known bald eagle nests on the Andrew Pickens Ranger District; however, the Chattooga and Chauga Rivers provide suitable foraging habitat for this species.

d. Cedar waxwing

Cedar waxwing is an uncommon resident of the southern Appalachian Mountains. During the breeding season they use mature conifers in openings or margins of spruce-fir forests, hemlock or white pine forests, and residential areas with scattered trees. During the winter they depend on fruit-bearing trees and shrubs. Habitat for cedar waxwing occurs within the proposed project area.

e. Common raven

Common raven is uncommon over most of its range. This species breeds near rocky and remote cliffs, and forages over various habitats such as open woods, margins and

fields. During the winter common raven tend to gather in flocks, with several dozen or more individuals sharing a roost. The open fields and wooded margins within and adjacent to the proposed Southern Appalachian Farmstead project offer potential foraging habitat.

f. Golden-crowned kinglet

This species winters primarily in coniferous trees, either in pure stands or mixed with some hardwoods. It is not known to breed in South Carolina or Georgia. Golden-crowned kinglet could use habitats within and adjacent to the proposed project area as wintering or migration stop-over habitat.

g. Winter wren

Winter wren is also an uncommon winter resident within the Chattooga River corridor in the Chattahoochee and Sumter national forests. It uses a wide variety of forest types, but tends to occur where vine tangles, fallen logs, uprooted trees or stream banks are found. Potential habitat for winter wren occurs within and adjacent to the proposed Southern Appalachian Farmstead project area.

h. Diana fritillary

This butterfly occurs in deciduous and pine forests near streams and along roadsides. The caterpillar feeds on violet (Viola) species, whereas adults feed on the nectar of a variety of plants such as milkweed (*Asclepias spp*.), buttonbush (*Cephalanthus occidentalis*), coneflower (*Echinacea spp*.), compassplant (*Silphium laciniatum*), and common mint (*Pycnanthemum incanum*). In 2004, one male Diana fritillary was captured at the Rich Mountain Road coneflower site (Scholtens 2004) after nine-person days of surveying throughout the Andrew Pickens Ranger District. In 2011, three male Diana fritillaries were observed in the same area (Dennis Forsythe, personal communication).

i. Chauga crayfish

Chauga crayfish is a U.S. Forest Service sensitive species that has a global conservation ranking of G2 (NatureServe, 2010). The G2 ranking indicates that this species is at a high risk of extinction due to a very restricted range, very few populations (often 20 or fewer), steep declines or other factors. In South Carolina, Chauga crayfish is restricted to the upper Savannah River basin, particularly the Chauga and Chattooga River basins in Oconee County. Range-wide, it is known to occur at about 20 locations. Most of its range in South Carolina lies within the Andrew Pickens Ranger District. This species is found at sites with medium to large cobble and boulders as substrate and little sediment accumulation. It is found in both high and low order streams, but is more abundant in higher order streams.

j. Edmund's snaketail

Edmund's snaketail is one of the least known dragonfly species in North America and has one of the most restricted ranges. It is known to occur in just a few counties in Georgia, South Carolina, North Carolina, and Tennessee. Edmund's snaketail was thought to be extinct in the 1970s and 1980s, but was rediscovered in North Carolina in 1994. This species was documented for the first time in South Carolina in 2008 on the Chattooga River near the Highway 76 Bridge (Hill 2009). Edmund's snaketail larvae inhabit clear, cold rivers and streams with rocks and riffles in the southern Appalachians. Adults occur in the riparian areas of rivers and streams. This species is susceptible to alterations in stream flow, siltation, flood scouring, pollution and loss of adult foraging habitat.

k. Brook floater

Brook floater is known to occur in the Chattooga River around and downstream of the Highway 28 Bridge (< 1 mile from the proposed project area). This freshwater mussel inhabits streams and rivers of varying sizes, but ones that usually have low to moderate flow velocities and stable substrates. In fast water, they will often occur clustered in protected areas such as behind boulders and near banks. The brook floater is sparse or absent in headwater streams and high-gradient river reaches that are prone to scour. It is frequently found in streams that have low calcium levels, low nutrient levels, and good water quality. The brook floater population in the Chattooga River is considered the most viable populations in the southernmost portion of the species' range. Stream bank instability, point and nonpoint sources of siltation and pollution, habitat degradation resulting from deforestation, impoundments, channelization, dredging, the introduction of exotic species and severe drought all threaten the aquatic habitats of freshwater mussels, as well as other aquatic species (e.g., fish, herpetofauna and aquatic invertebrates).

l. Eastern small-footed myotis

Eastern small-footed myotis is one of the smallest North American bats. At the southern terminus of its range on the Andrew Pickens Ranger District, this species was detected near Lake Cherokee and at the Chattooga River near Highway 28 (<1 mile from the proposed project area). In winter, Eastern small-footed myotis roost in caves, rock shelters, and fissures in cliffs. During migration and summer, little is known about the species' roosting habits, although there are reports of the species using abandoned buildings, bridges and rock shelters.

m. Rafinesque's big-eared bat

Rafinesque's big-eared bat is one of the least known bats of the southeastern United States. It is colonial – roosts can contain more than 100 individuals – and uses a wide

variety of roost sites: caves, old mine shafts, hollow trees, areas behind loose bark, abandoned buildings and under bridges. They leave their roosts only when it is completely dark, forage for insects and return to the roosts before sunrise. Rafinesque's big-eared bat hibernates in the winter months, but may be active during warm spells in the southern portions of its range. Several surveys have been conducted on the Andrew Pickens Ranger District for Rafinesque's big-eared bat as well as other chiropteran species (Bunch et al. 1998; Menzel et al. 2003; Loeb 2004). Eight individuals have been detected on the Andrew Pickens; the closest one to the proposed project area is approximately four miles away in an abandoned house in Village Creek.

2. Management Indicator Species

Management indicator species (MIS)[7] are representative of the diversity of species and associated habitats. MIS can be used as a tool for identifying specialized habitats and creating habitat objectives and standards and guidelines. Both population and habitat data are used to monitor MIS on national forests. Eighteen MIS are listed for the Chattahoochee and Sumter national forests; 16 are avian and two are mammals.

Trends in MIS populations are normally assessed relative to trends in their respective habitat. This section focuses on terrestrial MIS. Aquatic species are addressed in the Fisheries Section of this EA. Chattahoochee and Sumter national forest MIS are listed in Table 3.1.2B-3, along with general comments regarding their habitat associations and an indication of whether they are analyzed for the proposed Southern Appalachian Farmstead project.

[7] Management indicator species (MIS): A species whose presence in a certain location or situation at a given population indicates a particular environmental condition. Their population changes are believed to indicate effects of management activities on a number of other species or water quality.

Table 3.1.2B-3 MIS of the Chattahoochee and Sumter national forests, and project-level analysis for the proposed Southern Appalachian Farmstead project. Reason for including or not including in analysis: 1 = Species is known to occur within project area; 2 = Species is not known to occur within project area but suitable habitat exists; 3 = Species is not known to occur within project area and suitable habitat does not exist.

Type	Common Name	Habitat Association	Forest	Analyzed?/ Reason
Bird	Pileated Woodpecker	Standing Dead Trees (Snags)	CNF / SNF	YES / 1
Bird	Ovenbird	Large Contiguous Deciduous Forest Interior	CNF	NO / 3
Bird	Pine Warbler	Pine/Pine-Oak Forests	CNF / SNF	NO / 3
Bird	Acadian Flycatcher	Riparian Forests	CNF / SNF	YES / 2
Bird	Hooded Warbler	Mesic Deciduous Forests with Dense Understories	CNF / SNF	YES / 1
Bird	Scarlet Tanager	Oak Forests	CNF / SNF	NO / 3
Bird	Brown-headed Nuthatch	Mid- and Late-successional Pine and Pine/Oak Forests	SNF	NO / 3
Bird	Prairie Warbler	Early Successional Forests	CNF / SNF	YES / 2
Bird	Swainson's Warbler	Canebrakes and Other Early Successional Riparian Forests	CNF / SNF	YES / 2
Bird	Field Sparrow	Woodland, Savanna and Grassland Habitats	CNF / SNF	YES / 1
Bird	American Woodcock	Early Successionl Riparian Habitats	SNF	YES / 2
Bird	Northern Bobwhite	Early Successional Forest, Woodland, Savanna, and Grassland Habitat	SNF	YES / 2
Bird	Eastern Wild Turkey	Bottomland Forests, Extensive Hardwood and Mixed Forests	SNF	YES / 1
Bird	Red-cockaded Woodpecker	Longleaf Pine Woodland/Savanna	CNF	NO / 3
Bird	Wood Thrush	Forest Interior	CNF	NO / 3
Bird	Chestnut-sided Warbler	High Elevation Early Successional Forests	CNF	NO / 3
Mammal	Black Bear	Hardmast Forest, Early Successional Forest, Large Contiguous Forest Interior with Low Disturbance	CNF / SNF	YES / 1
Mammal	White-tailed Deer	Hardmast Forest, Early Successional Forest	CNF	YES / 1

General discussions of these species and their relationship to monitoring can be found in each forest's respective Forest Plan. The species evaluated in this section are either mentioned directly in the 1996 ORV Report or the habitat they are associated with is considered critical to the wildlife component of the Biology ORV.

Of these 18 MIS, only 11 are known to occur or have potential habitat within the proposed Southern Appalachian Farmstead project area. All other species and associated habitats that are listed in Table 3.1.2B-3 are excluded from further analysis because they do not occur within the proposed project area and because the proposed actions would not impact known populations or known habitats.

Red-spotted newt (*Notophthalmus viridescens viridescens*), a subspecies of Eastern newt, has been reported near the proposed project area. This species has two distinct stages in its post-metamorphic life: the terrestrial juvenile stage (called an eft) and the aquatic

adult stage. While not an MIS, red-spotted newt has received some public attention in relation to the proposed Southern Appalachian Farmstead project. A mass migration of efts was reported to have occurred across Highway 28 in the direction of the proposed project area. Eastern newt are one of the most widely distributed and abundant salamanders in the eastern United States (Lannoo 2005, Wilson 1995). While project activities may impact some individuals, implementation of the proposed project is not expected to adversely affect the viability of the species.

3. Migratory Birds

The U.S. Forest Service is recognized as a national and international conservation leader and plays a pivotal role in the conservation of migratory bird populations and their habitats. Within the National Forest System, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales and ensuring that bird conservation is addressed when planning for other land management activities.

The proposed Southern Appalachian Farmstead project area and surrounding areas within the Chattahoochee and Sumter national forests occur within the physiographic region known as the Blue Ridge Province in Georgia and South Carolina. This area is associated with Bird Conservation Region (BCR) 28 – Appalachian Mountains. The 105 million-acre BCR 28 is a forest-dominated area that provides habitat for 234 breeding, migratory and wintering bird species, many of which have experienced steep population declines in recent decades.

The following sources, along with an analysis of species' range, life history and available habitat information, were reviewed to identify priority migratory birds that are likely to occur in the proposed project area: (1) Partners in Flight (PIF) Priority Bird List for BCR 28; (2) U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern for BCR 28; (3) South Carolina Breeding Bird Atlas; and (4) *The Land Manager's Guide to the Birds of the South* (Hamel 1992). The results of this analysis produced the following table (Table 3.1.2B-4) of priority migratory birds that are associated with and potentially affected by the proposed Southern Appalachian Farmstead project.

Table 3.1.2B-4 Priority Migratory Birds Associated with the proposed Southern Appalachian Farmstead Project, Sumter National Forest, Andrew Pickens Ranger District, South Carolina.	
Species	**Habitat Association**
Brown Thrasher *Toxostoma rufum*	Overgrown fields, thickets, forest openings
Eastern Towhee *Pipilo erythrophthalmus*	Overgrown fields, thickets, forest understory
Field Sparrow *Spizella pusilla*	Overgrown fields, hedgerows, thickets
Indigo Bunting *Passerina cyanea*	Overgrown fields, thickets, forest openings
Loggerhead Shrike *Lanius ludovicianus*	Open fields and pastures, especially with scattered trees
Northern Flicker *Colaptes auratus*	Open woods and forest edges
Yellow-breasted Chat *Icteria virens*	Overgrown fields, hedgerows, thickets

All other migratory bird species that occur in BCR 28 were excluded from analysis because they were not identified as PIF priority species or USFWS birds of conservation concern, the proposed project area occurs outside of their known breeding, wintering, or migratory range and/or suitable habitat does not exist within the proposed project area.

III. EXISTING IMPACTS TO THE ENVIRONMENT

Currently, land management practices within the open fields of the proposed Southern Appalachian Farmstead project area benefit species that use grasslands, fields, thickets and other early successional habitats. There are no existing impacts to species that use riparian or mixed pine-hardwood forests because these areas are not actively managed. It is unlikely that aquatic habitats are impacted either because there are no ground-disturbing activities that regularly occur within the proposed project area that might contribute to sedimentation or pollution into the Chattooga River.

In the spring of 2011, approximately two acres of bamboo slash was prescribed burned. The fire resulted in nearly complete consumption of the woody fuel. The area was seeded and quickly re-vegetated with herbaceous forbs. The wildlife openings and forest margins adjacent to and within the proposed Southern Appalachian Farmstead project area are occasionally treated with herbicides to control non-native invasive plant infestations. Herbicide treatments of non-native invasive plants are designed to restore native plant communities and benefit wildlife habitats. Special protective measures, including the application of approved aquatic-labeled herbicides, are used to prevent contamination of aquatic habitats.

IV. Environmental Consequences

A. Alternative 1 – Direct and Indirect Effects

Under this alternative, the No Action Alternative, the existing buildings at the Russell Farmstead would not be stabilized, restored and maintained. Historic buildings would not be relocated to the site. A caretaker's residence, gravel parking area and public vault toilets would not be constructed. Re-establishment of the stagecoach and other roadbeds, fence lines, gardens, agricultural crops and pastures with farm animals would not take place. Limited use of U.S. Forest Service-approved pesticides would not be used. Living history interpretive events and programs would not take place. Foot bridges would not be placed over existing stream crossings and additional ditching or drainage structures would not be used. The existing Blue Ridge Electric power line would not be relocated to the Highway 28 corridor. The wildlife openings would continue to be maintained in an early successional condition by regular mowing.

There would be no direct effects to locally rare wildlife species, sensitive wildlife species, MIS or priority migratory birds with Alternative 1.

Locally rare wildlife species, sensitive wildlife species, MIS and priority migratory birds associated with open fields and early successional habitats would continue to benefit from the regular mowing of the wildlife openings. Habitat would remain available for species associated with riparian areas and mixed pine/hardwood forests. There would be no indirect effects to hellbender, Chauga crayfish, Edmund's snaketail or brook floater.

B. Alternative 1 – Cumulative Effects

A list of past, present and reasonably foreseeable projects is listed in Table 3.1-1.Cane restoration, periodic controlled burning and the associated fireline construction, the periodic mowing of the wildlife opening, periodic treatment of non-native invasive species in the area, mowing and tree trimming associated with Highway 28 road maintenance and power line right-of-way maintenance would help maintain or develop vegetation diversity in the area benefitting a variety of wildlife species and increasing habitat diversity. There are no expected adverse cumulative effects with the implementation of the proposed project.

B. Alternative 2 – Direct and Indirect Effects

1. Locally Rare and Sensitive Wildlife Species

a. Bald eagles

Bald eagles are not known to nest within the proposed project area. The Chattooga River, however, could be used as foraging habitat. The proposed Southern

Appalachian Farmstead project (including initial development and subsequent public use) is not likely to adversely affect bald eagles. If foraging bald eagles were disturbed by project activities, they would simply relocate to undisturbed areas.

Foraging and potential nesting or roosting habitat would not be altered with the implementation of the proposed action. Trees that would be removed during parking lot construction, power line relocation and other project activities are not typical bald eagle roost trees and occur in a relatively small area. There would be no adverse indirect effects for bald eagle.

b. Brook floater, Chauga crayfish, Edmund's snaketail and hellbender

Project activities are not likely to adversely directly affect these aquatic species. There would be no in-stream work that could crush or otherwise directly harm individuals. Sedimentation could potentially cause direct mortality to the larval or adult life stages of these organisms, but aquatic habitat protection measures found in the proposed project's design criteria (see Appendix B), the Forest Plan's standards and guidelines, and South Carolina's BMPs make this unlikely.

Direct mortality to brook floater, Chauga crayfish, Edmund's snaketail and hellbender is not likely from the use of insecticides and herbicides. Insecticides would not be used on livestock on the farmstead site. Treatment of livestock would occur offsite prior to transport to the farmstead. Insecticide use would be limited to the treatment of termites and other pests around buildings using common household pesticides. There would be no effect to these species from this type of pesticide use. Herbicide application using glyphosate would occur in the initial phases of vegetation removal. Refer to the Fisheries section for information on the effects of herbicide use on these aquatic species.

Indirect effects that may occur from the proposed Southern Appalachian Farmstead project include sedimentation and turbidity from soil and stream disturbance. Drainage and ditching structures may be installed in association with an unnamed tributary within the proposed project area. Specific locations for these activities have yet to be identified. To reduce potential impacts, these activities would be reviewed by an aquatic biologist, hydrologist, and/or soil scientist prior to any disturbance. Also, some road reconstruction/maintenance would occur across the stream and its tributary in the proposed project area. Design criteria have been developed to reduce or eliminate the adverse effects of drainage/ditching structures and road reconstruction/maintenance on aquatic habitats, the following design criteria would be implemented: 6-8, 11, and 14-18. More detailed impacts on the aquatic species and habitat are disclosed in the Fisheries section of this EA.

Water quality in the unnamed tributary may be impacted by the runoff/leaching of livestock waste from pastures, pens and corrals. Altered water quality could cause changes in aquatic community structure (e.g., the loss of some species and the increase

in more tolerant species over time). It is expected that the impact to the aquatic community would be less in the Chattooga River, which has greater flow and higher dilution capabilities. The following design criteria would be implemented to reduce or eliminate the adverse effects of pollution on aquatic habitats: 3 and 19-21. More detailed impacts on the aquatic species and habitat are disclosed in the Fisheries section of this EA.

All riparian corridors on national forest system lands are managed to retain, restore, and/or enhance the inherent ecological processes and functions of the associated aquatic, riparian, and upland components within the corridor. The Forest Plan's Riparian Corridor management prescription [8] is embedded in all adjoining prescriptions. Riparian corridors occur along all defined perennial and intermittent stream channels that show signs of scour, and around natural ponds, lakeshores, wetlands, springs, and seeps. The proposed Forest Plan amendment would: 1) reduce the riparian corridor minimum width within the proposed Southern Appalachian Farmstead from 100 feet to 40 feet for perennial streams, lakes, ponds, or wetlands, and 50 feet to 40 feet for intermittent streams; 2) allow the tethering or corralling of horses or other livestock within 40 feet of stream courses; and 3) amend the desired conditions for Riparian Corridors by including a description of tree density within streamside buffers along perennial and intermittent streams. These proposed changes to the Forest Plan, considering the proposed project's design criteria, other Forest Plan standards (e.g., "Water and Soil Quality" and "Channeled Ephemeral Steam Zone" standards that further protect aquatic and riparian habitats[9]), and South Carolina BMPs, would be adequate to protect the aquatic habitats within the proposed project area. Adverse indirect effects to brook floater, Chauga crayfish, Edmund's snaketail and hellbender are not expected to occur.

c. Cedar waxwing, common raven, golden-crowned kinglet, red-breasted nuthatch and winter wren

Because of the highly mobile nature of avian species, any disturbance associated with this project would likely result in the temporary displacement of individuals to undisturbed areas. These species are not expected to breed within or adjacent to the proposed project area, so loss of reproductive success resulting from potential project activities would not occur. There would be no direct effects to cedar waxwing, common raven, golden-crowned kinglet, red-breasted nuthatch and winter wren with the implementation of Alternative 2.

[8] See pp. 3-39 through 3-44 in the Forest Plan for a complete description of the Riparian Corridor management prescription.
[9] See pp. 2-4 and 2-5 in the Forest Plan for a complete description of "Water and Soil Quality" and "Channeled Ephemeral Stream Zone" Forest Standards.

Wintering, migratory stop-over and foraging habitat would not be substantially altered with the implementation of Alternative 2. A small amount of potential habitat might be lost (< five acres) with the construction of the parking area, relocation of the power line right-of-way and restoration of the Russell Farmstead site. The impacts to these species would be minimal given loss of habitat would be very small considering the availability of similar habitat immediately adjacent to the proposed project site.

d. Diana fritillary

Potential larval host plants and adult nectar plants occur along Highway 28 near the proposed project area. If project activities were to occur when larvae or adults were present, it is not likely that activities would disturb them. There are no direct effects expected to occur to Diana fritillary. Road banks – where most of the host and nectar plants are growing – would not be impacted by project activities.

e. Eastern small-footed myotis and Rafinesque's big-eared bat

Because of the highly mobile nature of chiropteran species, any disturbance associated with this project would likely result in the temporary displacement of individuals to undisturbed areas. It is possible that project activities (namely removal of trees to construct vehicle parking lot and restroom facilities, as well as relocation of the power line) could influence summer or winter roost trees. Roost trees would most likely be large snags that are hollow or have loose bark, mature live trees with exfoliating bark and mature live trees with cavities caused by disease or injury. If a roost tree occupied by bats were felled, it could result in the injury or death of one to several individuals. Additionally, any disturbance occurring during critical hibernation periods (November-March) could result in the arousal of individuals, leading to a depletion of individual fat reserves that may in turn result in mortality. Given the small size of the potential project area, and assuming these bats would be using similar habitats across the Andrew Pickens Ranger District, bat mortality as a result of the felling of roost trees may impact individuals but would not likely affect the viability of these species.

These species are known to roost in human-made structures such as abandoned buildings. It is possible that the stabilization, restoration, maintenance, and increased public use of the abandoned buildings in the proposed project areas may make them unavailable (assuming they currently provide habitat) as roosts for Rafinesque's big-eared bat and eastern small-footed bat. The felling of trees for the construction of a parking lot and restroom facility and the relocation of the power line right-of-way may reduce the number of available roost trees. These actions would not be expected to affect the viability of these species.

2. Management Indicator Species

Direct effects are not expected to occur to all MIS. Hooded warbler, Acadian flycatcher, prairie warbler, field sparrow, American woodcock, pileated woodpecker, northern bobwhite, Swainson's warbler, black bear, white-tailed deer, and eastern wild turkey are highly mobile species that would relocate to undisturbed areas if they were displaced by proposed activities. Bird monitoring is done on an annual basis to assess the presence/absence and frequency of occurrence of bird species by habitat conditions across the Sumter National Forest. Black bear monitoring is conducted every two years to develop an index of species population size.

Herbicide application as proposed in this alternative is not expected to have a direct effect on MIS. While the use of some herbicides can have direct effects on wildlife by causing injury or mortality from direct spray, drift, or ingenstion of contaminated food or water, the herbicide proposed in this alternative, namely glyphosate, is practically non-toxic to birds and mammals.

Glyphosate poses a very low toxicity risk to wildlife from both realistic and extreme exposures. Birds, larger mammals, reptiles, and amphibians appear to be at very low to negligible risk from glyphosate (USDA 1989). Acute oral LD_{50}[10] of glyphosate for northern bobwhite is greater than 2,000 mg/kg. Avian reproduction studies yielded no reproductive effects at dietary exposure levels of up to 1,000 ppm (USDA 1989). An ecological risk assessment of glyphosate reported estimated exposures that various mammals might encounter from potential use of glyphosate. The authors concluded that mammals, even the tiny meadow vole, would not be expected to encounter harmful levels of glyphosate through multiple possible exposure routes, including food, water, and direct contact (Giesy et al. 2000). A herbicide risk assessment has been completed for this project and the analysis can be found in the project file.

MIS Associated with Mesic Forests and Thickets (Hooded Warbler)

Habitat for hooded warbler may decrease slightly with the clearing of trees for the gravel parking lot and with the relocation of the Blue Ridge Electric power line. Considering the small size of habitat alteration and the availability of suitable habitat in the immediate vicinity as well as across the district, any indirect effects to hooded warbler would be insignificant.

MIS Associated with Riparian Areas (Acadian flycatcher, American woodcock, Swainson's warbler)

[10] Acute toxicity is commonly measured by the lethal dose (LD) that causes death in 50 percent of treated laboratory animals. LD_{50} indicates the dose of a chemical per unit body weight of an animal and is expressed as milligrams per kilogram (mg/kg). Chemicals are highly toxic when the LD_{50} value is small and practically nontoxic when the value is large.

Habitat for MIS associated with riparian areas may be affected within the proposed Southern Appalachian Farmstead site. With the proposed Forest Plan amendment, riparian corridor minimum widths would decrease from 100 feet to 40 feet for perennial steams (0-30% slope class) and from 50 feet to 40 feet for intermittent streams (0-30% slope class). Riparian vegetation and community structure associated with the perennial and intermittent streams may be altered to such a degree that this habitat is no longer suitable for Acadian flycatcher, American woodcock, and Swainson's warbler. Canebrake habitats along the Chattooga River would not be altered with the implementation of the proposed action.

MIS Associated with Open Fields and Early Successional Habitats (prairie warbler, field sparrow, Northern bobwhite quail, eastern wild turkey, black bear, white-tailed deer)

Only a very small portion of the existing wildlife openings would be altered from their current management as permanent early successional habitat. Prairie warbler, field sparrow, northern bobwhite, wild turkey, black bear, and white-tailed deer could continue to use the historic landscapes that are part of the proposal. Many historic buildings would be relocated adjacent the existing wildlife openings. While human activities associated with these buildings may have a direct effect on these MIS, any indirect effects to habitat would be insignificant.

MIS Associated with Mature Forests (pileated woodpecker)

Habitat for pileated woodpecker may decrease slightly with the clearing of trees for the gravel parking lot and with the relocation of the Blue Ridge Electric power line. Considering the small size of habitat alteration and the availability of suitable habitat in the immediate vicinity as well as across the District, any indirect effects to pileated woodpecker would be insignificant.

3. Priority Migratory Birds

It is possible that if priority migratory bird species were nesting during the relocation of historic buildings, construction of a caretaker's residence, gravel parking lot or vault toilets, or relocation of the power line, nests and nestlings could be lost. Impacts from this occurring are not significant since activities would have to take place at the exact time when species are most vulnerable. In addition, avian species will re-nest multiple times throughout the nesting season, further reducing the threat of direct effects to reproductive success.

Increased human presence and re-establishment of the stagecoach and other roadbeds, fence lines, gardens, agricultural crops and pastures with farm animals are not expected to have a direct effect to these species. These highly mobile species would simply relocate to undisturbed areas if they were displaced by proposed activities.

Herbicide application as proposed in this alternative is also not expected to have a direct effect on priority migratory birds. While the use of some herbicides can have direct effects on wildlife by causing injury or mortality from direct spray, drift or ingenstion of contaminated food or water, the herbicide proposed in this alternative, namely glyphosate, is practically non-toxic to birds. See the MIS section for more analysis on the effects of herbicides on avian species.

Stabilization, restoration and maintenance of the existing buildings, replacement of existing stream crossings with foot bridges and temporary spanning structures (including the use of additional ditching or drainage structures), and the relocation of the existing Blue Ridge Electric power line to the Highway 28 corridor would not result in a net decrease in habitat for priority migratory bird species.

Alteration of priority migratory bird habitat resulting from the relocation of historic buildings to the site and construction of a caretaker's residence, gravel parking area and public pit toilets would be insignificant. All species use overgrown fields, forest openings and/or forest edges. Proposed activities would not significantly alter this habitat type. There would be minimal impact to species.

Re-establishment of the stagecoach and other roadbeds, fence lines, gardens, agricultural crops and pastures with farm animals may make available habitat in this area less suitable for priority migratory birds. Likewise, human disturbance associated with increased vehicular traffic and public use, as well as the presence of farm animals, would likely decrease habitat suitability. Implementation of the proposed action would decrease the size of the existing wildlife openings. This may reduce the amount of habitat available to these species.

C. Alternative 2 – Cumulative Effects

1. Locally Rare and Sensitive Wildlife Species

Other management activities that have taken place within the Chattooga River watershed on the Chattahoochee and Sumter national forests include prescribed burning, timber sales, pre-commercial thinning and release of timber, southern pine beetle control, recreation trail reconstruction and maintenance, seeding of roads, skid trails, firelines, and log decks, and road maintenance (grading, brushing and mowing). Most of these activities are expected to continue in the near future at approximately the same levels.

The openings adjacent to the proposed Southern Appalachian Farmstead are mowed on an annual basis. Herbicides have been used and may continue to be used in and adjacent to these fields to control non-native invasive species. The U.S. Forest Service is developing a proposal to restore and manage cane on approximately 29 acres immediately adjacent to the proposed project area. Cane restoration would include the transplanting of cane stems, as well as periodic controlled burning of the area adjacent to the Russell Farmstead historic site. Other past, present and reasonably foreseeable projects are listed in Table 3.1-1.

Private lands within or adjacent the proposed project areas are made up of timberland, home sites, pastures and farmland. Timber management activities on private lands, including thinning, regeneration cuts and road building, have occurred over the past 10 years within some of these areas. There are no adverse cumulative effects that are expected with the implementation of the proposed project.

There would not be measureable cumulative adverse impacts to species and habitats from this project when considered in context with other activities in the area.

2. Management Indicator Species

This cumulative effects analysis, as well as the analysis in Alternative 3, tiers to *Management Indicator Species Population and Trends* (USDA 2001) which provides context for species and their habitats across the Sumter National Forest.

a. Hooded warbler

Hooded warbler are sensitive to forest fragmentation and require well-developed understories and midstories. Habitat for this species is slightly declining on the Francis Marion & Sumter National Forests (FMS). During 1992 to 2004, hooded warbler declined 0.6% per year (La Sorte et al. 2007) on the FMS. This alternative would not contribute to adverse cumulative effects on hooded warbler as past, present and reasonably forseeable future actions would not add to habitat fragmentation.

b. Acadian flycatcher

Acadian flycatcher generally use relatively undisturbed, mature, deciduous forests in riparian areas. This species has declined 1.2% per year on the Francis Marion and Sumter National Forests from 1992 to 2004 (La Sorte et al. 2007). Adverse cumulative effects are not expected from past, present and reasonably forseeable future actions as mature decidious forest habitat is unlikley to be substantially reduced in the proposed project area and adherence to Forest Plan standards relative to riparian habitat throughout the area.

c. Prairie warbler

From 1992 to 2004, prairie warbler populations on the Francis Marion and Sumter National Forests experienced an annual decline of 8.1% (La Sorte et al., 2007). Most declines in early successional species are attributed to the lack of disturbance in forested landscapes. The implementation of this alternative when considered with other past, present and reasonably foreseeable future actions would neither create nor eliminate significant amounts of habitat for this species.

d. Field sparrow

Habitat for field sparrow, a species associated with early successional habitats, is decreasing on the Andrew Pickens Ranger District. During 1992 to 2004, field sparrow populations on the Francis Marion and Sumter National Forests declined 19.1% per year (La Sorte et al. 2007). The most commonly accepted reason for decline is loss and fragmentation of habitat. Like prairie warbler, this species inhabits early successional habitats. This alternative would not contribute to adverse cumulative effects on hooded warbler as past, present and reasonably forseeable future actions would not add to habitat fragmentation.

e. American woodcock

American woodcock populations within the Appalachian Mountain region (Bird Conservation Region 28) have experienced a 1.6% annual decline from 1966 to 2009 (Sauer et al. 2011). Population trends are unavailable for the FMS because this species is not usually detected during the Forest's regular bird monitoring. Adverse cumulative effects are not expected from past, present and reasonably forseeable future actions as mature decidious forest habitat is unlikley to be substantially reduced in the proposed project area and adherence to Forest Plan standards relative to riparian habitat throughout the area.

f. Pileated woodpecker

Trend estimates indicate that populations of pileated woodpecker are stable across the southeastern United States. Pileated woodpecker use extensive areas of late successional coniferous and deciduous forest. However, young forests that retain scattered, large, dead trees also provide suitable habitat. This species is versatile in utilizing various forest habitats and adapts well to human habitation. Habitat also exists for pileated woodpecker on private property in the mountains, including in rural and suburban settings. Therefore, adverse cumulative effects to the species or its' habitat are not expected from past, present and reasonably forseeable future actions when added to the proposed action .

g. Northern bobwhite quail

Northern bobwhite quail populations have experienced sharp declines range-wide for several decades. Population trends on the FMS have been no exception. Bobwhite quail have experienced a 10% per year decrease on the FMS between 1992 and 2004 (La Sorte et al. 2007). Many factors, such as clean-farming practices, loss of early successional habitat, and intensive monoculture farming and timber management, contribute to these population declines (Burger 2002, Brennan 1991). Past, present and reasonably foreseeable future actions when combined with this proposal are not expected to substantially alter habitat for the species.

h. Swainson's warbler

Swainson's warbler breeds in dense shrub layers of mixed mesophytic forests of the southern Appalachian Mountains. It is often associated with extensive canebrake habitats. Swainson's warbler has experienced a positive population trend on the FMS (8.2% per year from 1992 to 2004) (La Sorte et al. 2007). Adverse cumulative effects are not expected from past, present and reasonably forseeable future actions when added to this proposal with the insignificant amount of riparian habitat that may be altered.

i. Black bear

Historically, black bear occurred throughout the entire state of South Carolina. By the early 1900s, over-harvesting and detrimental habitat changes restricted them to the most remote mountains and coastal swamps. Although estimating the size of the black bear population in South Carolina is very difficult, the South Carolina Department of Natural Resources estimated that the 2007 population was 1,500. All indicators suggest a rapidly expanding population, both geographically and numerically. The upward trend for black bear statewide suggests that habitat conditions for this species have improved. Even though habitat within the proposed project area may become less suitable for this species because of increased human disturbance, Alternative 2 would not have a significant effect on the availability of habitat on the Andrew Pickens Ranger District. Past, present and reasonably foreseeable future actions when added to this proposal are not expected to result in large changes to available habitat for the species.

j. Eastern wild turkey

Populations of Eastern wild turkey suffered dramatic declines in the early 1900s. Aggressive stocking programs successfully reintroduced Eastern wild turkey to most of its eastern range where populations continue to increase. This species uses upland forests of oaks, hickories and pines as well as bottomland forest. Wildlife openings are also commonly used. Even though habitat within the proposed project area may become less suitable for eastern wild turkey because of increased human disturbance, Alternative 2 would not have a significant effect on the availability of habitat on the Andrew Pickens Ranger District. Past, present and reasonably foreseeable future actions when added to this proposal are not expected to result in large changes to available habitat for the species.

k. White-tailed deer

The white-tailed deer is the most popular, economically important, and controversial game animal in Georgia and South Carolina. Their population, however, has been

experiencing declines over the last decade. The 2010 South Carolina Deer Harvest Reports states:

> After many years of rapidly increasing during the 1970s and 1980s, the deer population in South Carolina exhibited relatively stability between 1995 and 2002. Since 2002, however, the population has trended down, with 2010 being no exception. The overall reduction in harvest since 2002 can likely be attributable to a number of factors, including habitat change. Although timber management activities stimulated significant growth in South Carolina's deer population in the 1970s and 1980s, considerable acreage is currently in even-aged pine stands that are greater than 10 years old, a situation that does not support deer densities at the same level as younger stands in which food and cover is more available.

In addition to the effects of forest management on declining deer populations, predation by coyotes is also thought to adversely affect the numbers of deer. A study on the Savannah River Site investigating deer fawn survival indicates that 80% of all fawn mortality is caused by coyote predation.

The Andrew Pickens Ranger District is proposing approximately 6,000 ac of loblolly pine removal to take place across a 10-15-year period. If the loblolly pine project is implemented, habitat conditions should improve for white-tailed deer. Other past, present and reasonably foreseeable actions when added to this proposal are not likely to result measureable changes to habitat conditions and species trends in the area in the future.

3. Priority Migratory Birds

According to Breeding Bird Survey data from 1966-2007, all priority migratory bird species, with the exception of yellow-breasted chat, have experienced range-wide population declines over the 42-year period (Sauer et al. 2008). La Sorte et al. (2007) report even more noteworthy downward population trends for many of these species on the Francis Marion and Sumter National Forests between 1992-2004 (La Sorte et al. 2007). Table 3.1.2B-5 lists the population trends for priority migratory bird species.

Table 3.1.2B-5. Population Trends for Priority Migratory Birds Associated with the proposed Southern Appalachian Farmstead Project, Sumter National Forest, Andrew Pickens Ranger District, South Carolina.

Species	Percent Annual Change	
	Range-wide Breeding Bird Survey 1966-2007[1]	Francis Marion & Sumter National Forests 1992-2004[2]
Brown Thrasher *Toxostoma rufum*	-1.2	No data
Eastern Towhee *Pipilo erythrophthalmus*	-1.6	-5.2
Field Sparrow *Spizella pusilla*	-2.8	-19.1
Indigo Bunting *Passerina cyanea*	-0.5	No data
Loggerhead Shrike *Lanius ludovicianus*	-3.8	No data
Northern Flicker *Colaptes auratus*	-1.8	-6.6
Yellow-breasted Chat *Icteria virens*	+0.1	-10.4

[1] From Sauer et al. (2008); [2] from La Sorte et al. (2007)

The decline of these species can be attributed to a loss of early-successional habitats. Very little management resulting in long-term, early-successional habitat has been implemented on the Andrew Pickens Ranger District. There are approximately 300 acres of dove fields, wildlife openings and linear strips that provide early successional habitat. Between 2005-2009, only 711 acres were managed as woodlands. In 2011, 564 acres of woodlands were planned as part of the Loblolly Pine removal project. While district-wide prescribed burning may contribute to early successional conditions, more timber management is required to benefit wildlife species that use this habitat type.

Private lands adjacent to the proposed project area are made up of timberland, home sites, pastures, and farmland. Timber management activities on private lands, including thinning, regeneration cuts, and road building, have occurred over the past 10 years within some of these areas. Open habitats on private lands are generally not managed to specifically benefit wildlife. However, regular agricultural practices on private lands can and do meet the habitat requirement of some species.

The proposed action is not expected to have a significant adverse cumulative effect on priority migratory bird populations or habitat. Priority migratory bird species would still use habitat within the proposed project area.

D. Alternative 3 – Direct, Indirect, and Cumulative Effects

The direct, indirect and cumulative effects of Alternative 3 would be the same as determined under the Proposed Action.

3.2.2C BOTANY

The analysis of vegetation in the Chattooga River watershed is divided into two sections. The first section, Botany, addresses the effects of the alternatives on the botany components of the Biology ORV (Southern Appalachian endemics, spray cliff and old growth communities). The second section, Other Vegetation, addresses three botanical categories that currently occur in the Chattooga River watershed: (1) proposed, endangered, threatened, sensitive (PETS); (2) ecological plant communities; and (3) non-native invasive plant species (NNIS). Some species that are addressed in the Botany section are also addressed in the Vegetation section because they are not only species within the botany component of the Biology ORV, but also species that are PETS, ecological communities or MIS.

I. SUMMARY OF FINDINGS

Periodic studies and surveys have been done over the years to better understand the diversity of species and habitats that have been found in the Chattooga River watershed since the river was designated a Wild and Scenic River. The botany component of the Biology ORV is composed of the Southern Appalachian endemics, spray cliff communities and old growth forests. Potential effects on these values from the proposed alternatives would be trampling of plants by recreation users and secondarily due to the introduction of non-native invasive plant species.

All the designated plant species are Southern Appalachian endemics. They were considered rare when botanical values were designated. They include Biltmore sedge, Blue Ridge bindweed, divided leaf ragwort, Fraser's loosestrife, liverworts, Manhart's sedge, mountain camellia, Oconee bells, pink shell azalea and rock gnome lichen. Of these, only one – Fraser's loosestrife – is known to occur or have habitat within or adjacent to the proposed Southern Appalachian Farmstead project area.

Spray cliff plant communities occur on vertical to gently sloping rock faces that are constantly wet from the spray of waterfalls. They are inherently rare and dominated by mosses, liverworts and algae with vascular herbs having substantially less cover. No comprehensive spray cliff community assessment has been completed within the Chattooga River watershed. However, the most extensive floristic survey of spray cliffs within the watershed was conducted in 1995 (Zartman and Pittillo 1995). Thirty spray cliff communities were identified across all three national forests in the Chattooga River watershed. None were found in the general area around the farmstead. They were considered to be inaccessible and unlikely to be impacted by any of the alternatives.

A comprehensive old growth assessment was completed in the Chattooga River watershed in 1995 (Carlson 1995). There are no old growth communities located within or immediately adjacent to the proposed Southern Appalachian Farmstead project area. Proposed project activities would not affect old growth communities within the Chattooga River watershed.

II. Affected Environment

A. Condition at the Time of Designation

The 1971 Designation Study describes the Chattooga as being in a mostly forested condition. More specifically, it characterizes the nature of the Chattooga vegetation as:

> a continuum, in which forest elements merge, shift and can only be recognized as constituting distinctive types…Several rare plants occur along the Chattooga. Mountain camellia is found in abundance along Dicks Creek. The rare Shortia plant is found along Reed Creek and just above Burrells Ford. These areas, described first by pioneer botanist William Bartram, are still rich in botanical rarities including many species of wild orchids, fern, ground pine, lilies, trilliums and violets.

B. 1996 ORV Report

Knowledge of rare species has increased since designation due to some inventories to assess resources within the Chattooga River drainage. Two reports completed in 1995 include an inventory of spray cliff communities and an assessment of old growth. This additional information was used to evaluate the botanical values of the Chattooga WSR in the 1996 ORV analysis which identified several rare plant species. The rarest species within the Chattooga River are the Southern Appalachian endemics, which include liverworts, the rock gnome lichen, Blue Ridge bindweed, Fraser's loosestrife, Manhart's sedge, Biltmore's sedge, pink shell azalea and divided leaf ragwort. The 1996 analysis reports that additional populations of mountain camellia were found whereas no changes were found in the Oconee bell population. An old growth assessment found approximately 1,300 acres of old-growth forest communities. Common plant associations include Canadian hemlock-tulip poplar/great rhododendron/hard-leaf foam flower and shortleaf pine-southern red oak or chestnut oak/sourwood/hillside blueberry and tag alder-yellowroot. Forest overstories appear to be changing from oak and pine toward less fire-tolerant species, such as red maple, white pine, hemlock and rhododendron. Localized recreation use has caused some damage to plant communities, but many plant communities are disturbance oriented and recover from trampling. Spray cliff communities are very fragile ecosystems and could be impacted by visitor use.

C. Conditions as they Exist Today

1. Southern Appalachian Endemics

Several plant species were identified as part of the Biology ORV when the Chattooga WSR was designated. All the listed species were Southern Appalachian endemics that were rare at the time of designation. It is uncertain when the other plant species associated with the Biology ORV were first identified. The 1971 Study Report did not mention all the botanical species or groups that were mentioned later in the 1996 Chattooga River ORV assessment. Table 3.2.2C-1 lists the 10 plant species, their range and habitats, and whether or not they are included in the analysis of the proposed Southern Appalachian Farmstead project.

Table 3.2.2C-1. Southern Appalachian endemics that occur within the Chattooga River watershed, and project-level analysis for the proposed Southern Appalachian Farmstead project. Forest = Chattahoochee (CNF), Nantahala (NNF), and Sumter (SNF) National Forests. Reason for including or not including in analysis: 1 = Species is known to occur within project area; 2 = Species is not known to occur within project area and potential habitat does not exist.

Species	Forest	Range and Habitat	Analyzed?/ Rationale
Biltmore Sedge *Carex biltmoreana*	NNF SNF	Narrow Southern Appalachian endemic ranging within a 100-kilometer area from Brevard, NC to northwestern SC and northeastern GA. Habitat is restricted to rock outcrops either in woodlands or High Elevation Granitic Dome.	NO / 2
Blue Ridge Bindweed *Calystegia catesbeiana* var. *sericata*	CNF	Carolinas and GA to the FL panhandle. Habitats are all early seral from meadows, openings in Oak-Hickory Forest, roadside edges to open rock outcrops.	NO / 2
Divided Leaf Ragwort *Packera millefolium*	CNF NNF	Southern Appalachian endemic (NC, SC, and GA). Occurs in High Elevation Granitic Dome and Montane Cedar Woodland.	NO / 2
Fraser's Loosestrife *Lysimachia fraseri*	CNF NNF SNF	Mountains of NC, SC and TN. Habitats include Acidic Cove Forest, Oak-Hickory Forest, wet rock outcrops, and river rocky shoals and islands.	YES / 1
Liverworts	N/A	Known to be diverse across the Chattooga River watershed but no comprehensive survey has been conducted.	NO / 2
Manhart's Sedge *Carex manhartii*	CNF NNF	Northern GA and eastern TN to southwestern VA and southern WV. Habitats include mesic areas ranging from Rich Cove Forest to Oak-Hickory Forest.	NO / 2
Mountain Camellia *Stewartia ovata*	CNF NNF	Virginia and Kentucky south to Mississippi and Florida. Habitat primarily riparian and alluvial forest, often densely covered with *Rhododendron maximum*.	NO / 2
Oconee Bells *Shortia galacifolia* var. *galacifolia*	CNF NNF SNF	Narrow range of five counties on the Blue Ridge Escarpment in NC, SC, and Ga. Habitat streamside typically under dense *Rhododendron* shade.	NO / 2
Pink Shell Azalea *Rhododendron vaseyi*	NNF	NC endemic present at the southern edge of its range in the Chattooga River watershed. Occurs in high elevations from closed canopy Northern Hardwood forests to partially open areas including seeps, boulder fields, meadows, and Southern Appalachian bogs.	NO / 2
Rock Gnome Lichen *Gymnoderma lineare*	CNF NNF	NC mountains with peripheral populations in the mountains of TN, GA, and SC. Occurs on sloping to vertical rock faces with some seepage at higher elevations, generally above 5000 feet.	NO / 2

Of the ten Southern Appalachian endemics known to occur within the Chattahoochee, Nantahala and Sumter National Forests, only one, Fraser's loosestrife, is known to occur or have habitat within or adjacent to the proposed Southern Appalachian Farmstead project area.

2. Spray Cliff Communities

Southern Appalachian Blue Ridge spray cliffs are vertical to gently sloping rock faces that are constantly wet from the spray of waterfalls (NatureServe 2011, Schafale and Weakley 1990). Given these characteristics, they are inherently rare. The global rank is G2. These communities are found within southwestern North Carolina, northwestern South Carolina, northeastern Georgia and west of the escarpment in eastern Tennessee (NatureServe 2011). It is best developed within the Blue Ridge Escarpment region across North Carolina, South Carolina and Georgia. This community is dominated by mosses, liverworts and algae with vascular herbs having substantially less cover. Most associated species require a constantly moist substrate and high relative humidity. Sheltered site characteristics result only in rare freezes. Rare bryophytes, disjunct from tropical or subtropical regions, are able to persist within this community given the relatively constant temperature and high humidity. Deeply sheltered grottoes are often associated with spray cliff communities. These dark environs provide suitable habitat for other unusual or rare plants. There are no spray cliff communities located within or immediately adjacent to the proposed Southern Appalachian Farmstead project area. Proposed project activities would not impact spray cliff communities.

3. Old Growth Communities

No old growth inventory was documented at the time of wild and scenic designation. The most comprehensive old growth assessment was completed across the Chattooga River watershed in 1995 (Carlson 1995). Old growth was defined as principally plant communities dominated by trees more than 150 years of age and with little to no signs of human disturbance. A total of 110 stands, consisting of 4,578 acres, were identified as existing old growth across all three national forests in the Chattooga River watershed. While old growth conditions were identified across all forest types, the vast majority, around two-thirds, were in sub-mesic oak, which often was dominated by chestnut oak (*Quercus prinus*). There are no old growth communities located within or immediately adjacent to the proposed Southern Appalachian Farmstead project area. Proposed project activities would not affect old growth communities within the Chattooga River watershed.

III. Existing Impacts to the Environment

A. Southern Appalachian Endemics

The Southern Appalachian endemics—Biltmore sedge, Blue Ridge bindweed, divided leaf ragwort, liverworts, Manhart's sedge, mountain camellia, Oconee bells, pink shell azalea, and rock gnome lichen—either do not occur in the Chattooga River corridor or habitat does not exist within or adjacent to the proposed Southern Appalachian Farmstead project.

Fraser's loosestrife is known to occur adjacent to the proposed project area. This species occurs in permanent openings located along roads, utility rights-of-way, and river corridors. This species has a high light requirement, especially for flowering. It grows at elevations that range from 1,100 to 3,000 feet. Soils at most sites are mapped as Evard, a strongly acid upland soil that is deep, well-drained and has a loamy surface and sub-surface. Approximately 1,700 plants from 35 locations were documented on the Andrew Pickens Ranger District in 1999 (Shatley 1999). There are four known records of Fraser's loosestrife that occur along Highway 28 near the proposed project area. These were inventoried during July 2009. Plants still occur at three of these four sites. One new record of Fraser's loosestrife was detected along Highway 28 near the proposed project area.

B. Spray Cliff Communities

Spray cliff communities are not impacted because they are not located within the project area or within the Chattooga WSR corridor.

C. Old Growth Communities

Old growth communities are not impacted because there are none located within or adjacent to the proposed project area.

IV. Environmental Consequences

A. Alternative 1 – Direct and Indirect Effects

Under this alternative, the existing buildings at the Russell Farmstead would not be stabilized, restored and maintained. Historic buildings would not be relocated to the site. A caretaker's residence, gravel parking area and public vault toilets would not be constructed. Re-establishment of the stagecoach and other roadbeds, fence lines, gardens, agricultural crops and pastures with farm animals would not take place. Limited use of U.S. Forest Service-approved pesticides would not be used. Living history interpretive events and programs would not take place. Foot bridges would not be placed over existing stream crossings and additional ditching or drainage structures would not be used. The existing

Blue Ridge Electric power line would not be relocated to the Highway 28 corridor. The wildlife openings would continue to be maintained in an early successional condition by regular mowing.

There would be no direct or indirect effects to Fraser's loosestrife, spray cliff or old growth communities with Alternative 1, the No Action Alternative.

B. Alternative 1 – Cumulative Effects

Past, present and reasonably foreseeable activities are listed in Table 3.1-1. There are no adverse cumulative effects that are expected with the implementation of the proposed project.

With the No Action Alternative, no additional activities would take place so there would be no additional cumulative effects within the proposed project area or within the Chattooga River watershed within the Chattahoochee and Sumter national forests.

C. Alternatives 2 and 3 – Direct and Indirect Effects

Direct effects are not expected to occur to Fraser's loosestrife with the implementation of this project. All of the plants known to occur adjacent to the proposed project area occur along Highway 28 and would not be affected by project activities, including the construction of the parking area, installation of vault toilets and relocation of the Blue Ridge Electric power line. Direct effects would not occur to spray cliff communities or old growth communities because these do not exist within or adjacent to the proposed project area.

There would be no adverse indirect effects of the proposed action on Fraser's loosestrife. By implementing the proposed action, existing habitat would not be altered and there is no potential for new habitat to be created. Indirect effects would not occur to spray cliff communities or old growth communities because these do not exist within or adjacent to the proposed project area.

D. Action Alternatives – Cumulative Effects

Past, present and reasonably foreseeable activities are listed in Table 3.1-1. There are no adverse cumulative effects expected with the implementation of the proposed project

3.2.3 SCENERY ORV

I. SUMMARY OF FINDINGS

All alternatives would continue to protect and enhance the Scenery ORV of the Chattooga Wild and Scenic River.

II. AFFECTED ENVIRONMENT

A. Condition at the time of designation

The 1971 Designation Study describes the scenery along the Chattooga River as follows:

> The beauty of the rapids and scenery of the Chattooga drainage is unsurpassed in the Southeastern United States. The river begins as a sparkling mountain rivulet cascading down the lush green, heavily-forested sides of the Blue Ridge and continues between high ridges through the deeply entrenched Chattooga River Gorge. The first 5 ½ miles of the Chattooga include several waterfalls and some of the most spectacular long range vistas on the whole river. The river here is small and fast, dropping through densely forested slopes, with an occasional glimpse of farms and summer homes. The next 16 miles are through generally inaccessible country. The river follows a narrow tortuous route over numerous rapids, cascading around boulders and through self-cut rock flumes and intermittent quiet, deep pools. Most of this section is narrowly contained in a deep, fast descending gorge between high ridges. In the whole 16 miles, only two narrow Forest Service roads break out of dense forest to span the river. The river drops out of the Chattooga Gorge and for the next six miles flows quietly by fields, farms and homes. The West Fork joins the River here, and these two streams provide easy canoeing water through an area of pastoral development.
>
> Steep forested slopes on either side of the river give a sense of seclusion to anyone on the river…The river constantly curves and meanders and there are good views of the surrounding ridges…The seasons of the year affect color, texture and character of the vegetation…The river itself provides a constantly changing scene. It follows a varying route over raging rapids, around enormous boulders and twisting rock-choked channels, and through narrow cliff-enclosed, deep pools…On the slower stretches, sounds other than that of water can be heard and attention is drawn away from the river course. Smooth water reflects images of plants along the

> bank as well as clouds, sky and ridges. Slow water allows the surroundings to be seen and enjoyed, provides relaxation after the last rapids, and gives time to prepare for the next rapids. Near Highway 28, two long sections of slow, smooth water occur on the River and West Fork.

When the river was designated, sections of it were classified as wild, scenic or recreation. The classifications specify the amount of allowable development within a section. Generally, "Wild" sections are inaccessible by road, have a natural-appearing character and dramatic natural beauty. "Scenic" sections include road crossings, bridges and developed recreation sites; though these sections have high quality scenery, they contain obvious signs of human modification. "Recreation" sections may have major road crossings, large bridges, roads paralleling the river, more intense recreation development, or tracts of private land with development within the corridor. The scenic character of "Recreation" sections may include frequently seen human modifications and, although still visually distinctive, represent the lowest level of scenic quality among the three classifications. The area of the corridor where the farmstead is being considered is within a "recreation" section.

B. 1996 ORV Report

The 1996 ORV report found that scenery continued to be "an important part of the experience. The scenery along the Chattooga River is exceptional." The 1996 ORV report concludes:

> The outstanding scenery values are still present in the corridor. Studies done since 1971 confirm that the scenery and the natural environment are primary to the experience that people seek when coming to a National Wild and Scenic River.

C. Conditions as They Exist Today

Scenery remains largely unchanged since the time of designation. Timber harvest has not taken place in the Chattooga River corridor since designation. However, some changes to the vegetation have been occurring. Eastern hemlock trees are dying from Hemlock Wooly Adelgid (HWA) an insect native to East Asia. Eventually all of the hemlocks will succumb to this pest and other vegetation will take its place. Non-native invasives have been treated in the area of the farmstead and river.

Wildlife opening maintenance continues in the immediate vicinity of Russell Farmstead. The 21.6 acre project area is a mosaic of wildlife openings, grassland, power-line right of way, forest and a small portion of that contains roads and old farm buildings in a state of disrepair.

The scenic resources of the Sumter National Forest are managed in accordance with the *Revised Land and Resource Management Plan, Sumter National Forest* (Forest Plan) which established the Scenic Integrity Objectives (SIOs) for the area. The SIO for the proposed project area is high. An SIO of high refers to landscapes where the valued landscape character appears intact. The area surrounding the proposed project site is predominately Natural Appearing Landscape Character, with some pastoral views. Landscape character is described as the particular attributes, qualities and traits of a landscape that give it an image and make it identifiable or unique. Cultural features, like the barns and fields are present, often obvious and represent the varied people who have lived and used the land.

III. Existing Impacts to the Environment

Currently, scenery impacts within the river corridor come from soil compaction, erosion and vegetation damage associated with dispersed camping and user-created trails; human waste and trash accumulation; and erosion associated with undesignated roadside parking. Occasional non-native invasives plant eradication can have short-term negative impacts to scenery but improves the long-term scenery resource as native species recover and enhance the naturally appearing landscape.

IV. Environmental Consequences

A. Alternative 1 - Direct and Indirect Effects

There would be no direct impacts and few indirect impacts other than a possible gradual decline of buildings over time. This alternative would maintain the site as mostly forested with maintenance of the existing wildlife openings/fields. As time passes, natural processes (like insects, disease and storm events) or other management practices, such as wildlife opening maintenance would minimally affect the scenery of the area. A power line right-of-way parallels Highway 28 for several hundred yards and then extends through the site and will remain in this alternative for the foreseeable future. Occasional non-native invasive plant eradication would have short-term negative impacts to scenery but would improve the long-term scenery resource as native species recover and enhance the naturally appearing landscape. A portion of forest visitors generally would be pleased with these changes or actions over time as the area continues to be minimally developed.

This alternative would maintain the scenic integrity objective of high provided that Forest Plan standards and guidelines are followed. This alternative would continue to protect the Scenery ORV of the Chattooga Wild and Scenic River.

B. Alternative 1 – Cumulative Effects

A list of past, present and reasonably foreseeable activities is listed in Table 3.1-1. The planned restoration of giant cane along the river would improve visual quality. Prescribed burning would have short-term visual impacts but vegetation would recover quickly. In the long-term, prescribed burning would enhance native vegetation which would improve the naturally appearing landscape. The power line corridor in the area is narrow and does not substantially impact the views in the area. Road maintenance and power line maintenance does not impact scenic quality because these activities are minor when compared to the surrounding mature forested areas. Potential replacement of the Highway 28 bridge would have short-term impacts on scenic quality. However, proper design of the bridge (similar to what took place when the Highway 76 bridge was replaced) would have minimal impacts on scenic quality.

Long-term impacts to scenery are expected to be minimal and the scenic integrity objective is expected to remain high. This alternative would continue to protect the Scenery ORV of the Chattooga Wild and Scenic River along this recreational segment of the river.

C. Alternatives 2 and 3 - Direct and Indirect Effects

There would be short-term direct impacts to scenery during construction of the parking area, restrooms, SAF site, associated buildings, caretaker's residence, relocation of the power line and the associated fields and gardens. Direct short-term impacts include clearing, grading and construction activities including removal of vegetation and forested lands to accommodate additional structures and parking. Existing and new structures would be more visible to vehicular and pedestrian traffic along Highway 28 and only occasionally observed from the Chattooga River. The site would be returned to a farmstead and pastoral scenes which are generally viewed as positive scenic element and consistent with the current management prescription of designated recreational river segments. Historic and pastoral scenes are valued by the public. Relocation of the existing power line would have positive long-term impacts to scenery on the site. The long-term visual impacts would be positive on the scenery. Some forest visitors generally would be pleased with these changes or actions over time. Others may prefer a more closed forest canopy and fewer openings than in these alternatives.

These alternatives would maintain the scenic integrity objective of high provided the site-specific design criteria are followed. These alternatives would continue to protect the Scenery ORV of the Chattooga Wild and Scenic River.

D. Alternatives 2 and 3 - Cumulative Effects

Past, present and reasonably foreseeable future actions are listed in Table 3.1-1. The activities proposed at the farmstead would add visual diversity and would be consistent with the pastoral views that are common in this area of the river and are appropriate with its current designation along this segment as Recreation. Pastoral views were present and considered appropriate when the Chattooga River was designated as wild and scenic. Long-term impacts to scenery are expected to be minimal and the scenic integrity objective is expected to remain high.

Long-term impacts to scenery are expected to be minimal and the scenic integrity objective is expected to remain high. These alternatives would continue to protect the Scenery ORV of the Chattooga Wild and Scenic River along this recreational segment of the river.

3.2.4 HISTORY ORV

I. Summary of Findings

This section analyzes effects of the alternatives on known heritage resources in the Area of Potential Effects (APE). The proposed Southern Appalachian Farmstead project includes areas which have been the focus of extensive archaeological and architectural historic preservation study including all or portions of three known heritage sites. These are the Cherokee town of Chattooga (38OC18), the Russell House and outbuildings (38OC106) and a prehistoric ceramic scatter (38OC412). The action alternatives would protect the History ORV (Forest Plan Goal 28, pg. 2-26) and areas with "special paleontological, cultural, or heritage characteristics to maintain or restore those characteristics" (Forest Plan Goal 31, pp. 2-28).

II. Affected Environment

A. Condition at the time of designation

The 1971 Designation Study describes historic sites of interest on and near the Chattooga River that caused the river to eventually be designated as wild and scenic. Section B of the 1971 Designation Study describes the historic features of the Chattooga WSR Corridor as including historic Cherokee towns, Indian trails, early historic settlement, the Black Diamond Railroad, splash dams, historic ferries and historically named natural features including rapids, waterfalls and cliffs. Chattooga Old Town was mentioned but erroneously attributed to Native Americans predating the Cherokees. The Russell House and farm was not noted in the 1971 study.

B. 1996 ORV Report

The 1996 ORV report includes the following:

> Very little systematic archaeological survey has been completed in the river corridor. A total of 38 archaeological sites have been recorded within the corridor. These include 15 prehistoric sites, 15 historic or farmstead sites, a railroad embankment, 2 historic cemeteries, a nineteenth century minerals prospecting pit, and a rock shelter. Ellicott Rock, Thrifts Ferry, the Winchester Cemetery, several historic houses and other identified sites have not been recorded…Approximately one-half of these sites are considered potentially eligible for the National Register of Historic Places…More archaeological evaluation is needed on the other sites to determine if they are eligible.

C. Conditions as They Exist Today

Table 3.1.4-1 Known Heritage Resources in the APE of the proposed Southern Appalachian Farmstead

Resource	Type	Culture Period	National Register of Historic Places
Chattooga Town 38OC18	Cherokee village earlier occupations, Euro-American farm	17th, 18th, 19th, 20th century, Late Archaic, Woodland, Mississippian Periods	eligible
Russell House 38OC106	Historic Period Farm Complex	Mid-19th to early 20th century	listed
Unnamed Site 38OC412	Historic Cherokee artifact scatter	17th-18th century	not eligible

1. Chattooga Town 38OC18

This heritage site is the location of Chattooga Town, a 17th and 18th century Cherokee village. The village had a population of about 100 persons, contained 10-15 houses and a council house, and was most intensively occupied from the mid-1600s to around 1740 (Schroedl, 1994). Earlier prehistoric archaeological components from the Archaic, Woodland and Mississippian periods are also present. The site was first recorded as an archaeological site in 1969 and was acquired by the U.S. Forest Service in 1970 (Elliott, 1984:17). It was a cultivated field at the time of acquisition.

U.S. Forest Service archaeologists examined portions of 38OC18 in 1976 and 1978 prior to proposed parking areas (Green 1976; Prokopetz 1978). The site was determined eligible for the National Register of Historic Places (NRHP); but, information provided was insufficient to support placement on the NRHP. Forest Service test excavations in 1984 discovered buried archaeological features and the location of a Cherokee house in the field north of Highway 28.

The most extensive study of Chattooga Town was done from 1989 to 1994 (Schroedl 1994). It identified the locations of former Cherokee buildings and determined the types and placement of archaeological resources on the site (Cutts 1997; Howard 1997). Further test excavations were conducted on the site in 2003 and 2005 in a study prior to replacement of the Highway 28 bridge over the Chattooga River (Pomfret 2006). A South Carolina state highway historic marker commemorating Chattooga Town was placed on Highway 28 near the site in 2008.

Archaeologic site 38OC18 is eligible for placement on the NRHP and is in protective management. It was intensively cultivated for more than 100 years with some disturbance to upper soil layers. Most of the site is now forested or mowed as a wildlife opening.

2. Russell House 38OC106

The U.S. Forest Service acquired the Russell House, outbuildings and agricultural fields in 1970. The property had been maintained as farmland until acquired. William Clark bought the property in 1816 from Walter Adair, a Cherokee. The farm had passed to the Nicholson family by 1827 and in 1867 to William Ganaway Russell (O'Steen and Chapman 1991:6). The Russell House replaced the earlier Nicholson house and was built in the 1880s or 1890s.

The U.S. Forest Service recorded the Russell House as a heritage resources site in 1978 and requested a determination of eligibility from the Keeper of the NRHP in 1979. The site was determined eligible for the NRHP in 1980. Architectural drawings of the buildings were made in the early 1980s. The U.S. Forest Service took architectural documentary photos in 1987 and completed an architectural assessment of the buildings in 1987 (Preservation Consultants 1987). The Russell House and outbuildings were listed on the NRHP in 1988.

The NRHP property includes five acres. Twelve buildings were included in the nomination consisting of the Russell House, three barns, two storage sheds, a tool shed, a smoke house, a corn crib, a spring house, a pig farrow and a root cellar. The house, built after 1867 and expanded in the late 19th and early 20th centuries was significant in the area of transportation as a stage stop and inn. The farm building complex dating from the mid-19th to early 20th centuries was also found significant in the area of agriculture. The outbuildings are representative of the diverse aspects of a small late 19th/early 20th century Appalachian farmstead and are common building types that incorporate regional construction techniques.

Fire destroyed the main house, a storage building and the smoke house in 1988. The U.S. Forest Service completed an architectural evaluation of the remaining nine outbuildings and an archaeological survey of the site in 1991 (O'Steen and Chapman 1991). The study concluded that the farm buildings represent an array of farm activities from the late 19th and early 20th centuries, but the loss of the Russell House diminishes the material integrity of the site. The associated significance of the site in transportation history was diminished with the destruction of the former house or inn. The archaeological survey found no significant archaeological remains on 38OC107. The consultant concluded that the site no longer contained sufficient integrity or significance, given the loss of the house, to warrant continued listing on the NRHP. However, the site retained value as a historic agricultural farm complex and could be interpreted.

The U.S. Forest Service consulted with the South Carolina State Historic Preservation Office (SHPO) which concurred that the site probably had lost much of the characteristics under which it was nominated to the NRHP. The U.S. Forest Service considered the site no longer eligible and thought the SHPO had removed it from the NRHP. However, 38OC107 was never removed from the NRHP. Currently, the U.S. Forest Service maintains that the site retains sufficient integrity of design and setting, and

links to historic transportation and agriculture themes to remain listed on the NRHP. Management has included minimal maintenance of access paths and spaces near the buildings which have been deteriorating from natural effects.

3. Unnamed prehistoric site 38OC412

This site was recorded in 2003 during a survey for the renewal of the Haywood Electric power line right-of-way located west of the Russell House farm buildings (Gresham 2003:20-23). The site consists of a small scattering of Cherokee complicated stamped potsherds. Four sherds[11] were recovered from two shovel test pits. The site measures approximately 20 meters in diameter. Gresham concluded that this was not the location of a Cherokee house or integral part of Chattooga Town, but may be pottery broken when accessing a nearby spring. The site was determined to be not eligible for the NRHP.

III. Existing Impacts to the Environment

Chattooga Town and the unnamed artifact scatter are unlikely to be impacted by current management actions. Current management activities would avoid adverse effects to the Chattooga Town site. Periodic monitoring of the site would ensure their continued protection. Buildings at the Russell Farm site will continue to deteriorate. However, archival information and architectural documentation have been done to capture any historic information that can be analyzed further in the future if needed.

IV. Environmental Consequences

A. Alternative 1 - Direct and Indirect Effects

Current management is not maintaining the buildings or historic landscape on historic property 38OC106. Continuing current management could be construed as neglect and an adverse effect on this NRHP property. The portion of site 38OC18 within the proposed project is maintained as forest and mowed fields. Site 38OC412 is situated in a power line corridor that is periodically cleared of vegetation. This alternative would have no effect on sites 38OC18 or 38OC412. The two existing signs offer minimal interpretation of Chattooga Town and the historic farmstead.

Although the NRHP property may be negatively impacted under this alternative, overall Alternative 1 would continue to protect the History ORV at the proposed project site along this portion of the Chattooga River.

[11] Shard; A broken piece or fragment of a brittle substance, especially of pottery (www.dictionary.com).

B. Alternative 1 – Cumulative Effects

A list of past, present and reasonably foreseeable activities is listed in Table 3.1-1. These projects would have no cumulative effect on heritage resources identified in Table 3.1.4-1.

The History ORV would continue to be protected along this portion of the Chattooga River.

C. Alternative 2 - Direct and Indirect Effects

Alternative 2 would restore and maintain existing buildings and historic landscapes and retain values which contribute to the NRHP eligibility of the Russell House site. Existing buildings would be maintained using NRHP guidelines. Relocated historic buildings would be in character with the original buildings and would not, with the exception of a replacement of the smoke house which was burned, be on the NRHP site. A relocated Appalachian farmhouse, sorghum furnace and mill would be located north of the NRHP site in an area outside the Chattooga Town site. Parking, modern vault toilets and an office/gift shop sales area would be non-intrusive and clearly separated from the historic building complex. The caretaker's residence would be located south across the highway from the known heritage sites. The residence would be a traditional local housing type and in character with the historic setting.

Alternative 2 would also respond well to Forest Goal 31 – to manage areas with special paleontological, cultural, or heritage characteristics to maintain or restore those characteristics (RLRMP, 2-28) and to Goal 32 – to meet the demand for quality heritage learning and tourism opportunities and contribute to the realization of the potential of heritage sites on the national forest to draw heritage tourism partners to benefit both the heritage assets and public programs (RLRMP, 2-28).

Previous archaeological work has identified portions of the Chattooga Town site in areas planned for cultivation under this alternative, but no significant archaeological remains were identified in the proposed project area. Potential effects to historic properties due to the management of the proposed Southern Appalachian Farmstead, including the restored agriculture, would be addressed in a historic properties management plan. The relocation of the power line to the Highway 28 corridor would remove an intrusive element from the vicinity of the farm buildings; it would have no effect on archaeological resources.

High-quality living history events and interpretive programs would enhance history values and encourage preservation and protection of heritage resources. The site would likely become a high-quality opportunity for heritage tourism in the local and tri-state area.

Alternative 2 would continue to protect the History ORV at the proposed project site along this portion of the Chattooga River.

D. Alternative 3 - Direct and Indirect Effects

Alternative 3 would restore and maintain existing buildings and historic landscapes and retain values which contribute to the NRHP eligibility of the Russell House site. Because this alternative excludes the Appalachian farmhouse, it would lessen opportunities to interpret Southern Appalachian lifeways as compared to alternative 2.

Alternative 3 would also respond well to Forest Goal 31 – to manage areas with special paleontological, cultural, or heritage characteristics to maintain or restore those characteristics (RLRMP, 2-28) and to Goal 32 – to meet the demand for quality heritage learning and tourism opportunities and contribute to the realization of the potential of heritage sites on the national forest to draw heritage tourism partners to benefit both the heritage assets and public programs (RLRMP, 2-28).

Alternative 3 would continue to protect the History ORV at the proposed project site along this portion of the Chattooga River.

E. Alternatives 2 and 3 – Cumulative Effects

Past, present and reasonably foreseeable activities are listed in Table 3.1-1. These projects would have no cumulative effect on heritage resources identified in Table 3.1.4-1.

The History ORV would continue to be protected along this portion of the Chattooga River.

3.2.5 GEOLOGY ORV

I. SUMMARY OF FINDINGS

Management and recreational activities in the corridor have not changed any of the outstanding geologic values since the river was designated in 1974. The geologic processes that shaped the narrow rocky gorges are unaltered by human activities.

All alternatives would continue to protect and enhance the Geology ORV of the Chattooga Wild and Scenic River.

II. AFFECTED ENVIRONMENT

A. Condition at Time of Designation

Section B of the 1971 Designation Study describes the Chattooga River and the geology that caused the river to eventually be designated as a wild and scenic river:

> The massive face of the Southeastern Blue Ridge Escarpment is divided by a number of beautiful gorges representing millions of years of carving by waterborne sands and millions of years of high rainfall. The Chattooga, flowing for a major portion of its length through one of these gorges, is less developed than any of the other rivers of the Escarpment Region. The Chattooga River is entrenched by steep rocky, forested slopes that plunge into deep, narrow gorges. The river flows through the steepest, most pronounced portion of the Chattooga Gorge in its first 20 miles, averaging over 84 feet drop per mile. The next 33 miles to Tugaloo Reservoir is through wider, more gentle mountains with an average drop of 22 feet per mile.

B. 1996 ORV Report

The 1996 ORV Report includes additional information on the Geology ORV:

> Most rivers with the Southern Blue Ridge drain into the Gulf of Mexico via the New, Tennessee, and Coosa River rivers. But the Chattooga River drains into the Atlantic. Another remarkable geomorphological feature discussed in the draft report from the Chattooga Team is that the Chattooga River, Tallulah River, and Chauga River most likely at one time flowed into the Chattahoochee River, but the Tugaloo River (formed by the confluence of the Chattooga River and the Tallulah River) captured those rivers from the Chattahoochee.

A stream capture of this magnitude is unusual in the region. Geologists attribute this stream capture to geologic structures, namely joint sets, foliation, and compositional layering.

C. Conditions as they Exist Today

The geological and geomorphological values are still unaltered today.

The rocks and geologic structure found within the watershed indicate periods of mountain building, continental rifting, erosion, sedimentation and metamorphism over millions of years.

III. Existing Impacts to the Environment

Human activities that have the potential to influence or alter geologic processes can include land uses (agriculture, grazing, forestry, water impoundments and urbanization), consumptive uses (groundwater withdraw, oil and gas production and mining) and infrastructure development (bridges, roads, etc.).

The major threat to the Chattooga, future dams, was addressed during wild and scenic designation in 1974. Land uses have stayed relatively constant since designation with a majority of the watershed forested and in federal ownership (refer to Table 3.4.2-4 for existing land uses). No consumptive uses are occurring in the corridor. Infrastructure activities have maintained the status quo by replacing bridges across the river that existed before the river was designated. Road access to the river has been reduced since designation.

The area surrounding the proposed SAF project area is a mixture of forest and open areas within federal ownership. Land use has remained steady since designation and is geared toward protection and enhancement of ORVs.

IV. Environmental Consequences

A. Alternative 1 - Direct, Indirect and Cumulative Effects

There are no impacts to the Geology ORV under this alternative on the recreational segment of the Chattooga WSR or the entire Chattooga Wild and Scenic River.

Past, present and foreseeable projects would have no cumulative effects to geological and geomorphological processes.

This alternative would continue to protect the Geology ORV in the entire Chattooga Wild and Scenic River.

B. Action Alternatives - Direct, Indirect and Cumulative Effects

Impacts to the Geology ORV would not be expected from any of the action alternatives since land uses are not expected to change, no consumptive uses are proposed and further infrastructure development is unlikely given the extensive federal ownership in the drainage and river corridor. Past, present and foreseeable projects listed in Table 3.1-1 would have no cumulative impacts to geological and geomorphological processes.

All action alternatives would continue to protect the Geology ORV in the entire Chattooga WSR.

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3.3 OTHER RIVER VALUES

3.3.1 FREE-FLOWING CONDITION

The Wild and Scenic Rivers Act (WSRA) requires that the managing agency preserve the free flowing condition and protect the water quality of designated rivers. This section analyzes the effects of all alternatives on the river's free flowing condition and water quality.

Section 16 (a) of the WSRA defines "free-flowing" as "existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway." As required by the WSRA, at the time of designation, the Chattooga River was flowing in its natural condition without impoundment from Cashiers Lake south to Tugaloo Lake.

I. SUMMARY OF FINDINGS

None of the alternatives would impact the free-flowing condition of the Chattooga WSR.

II. AFFECTED ENVIRONMENT

There are currently no impacts to the natural flows of the Chattooga River for its entire length.

III. EXISTING IMPACTS TO THE ENVIRONMENT

The free-flowing condition of the Chattooga River is unchanged.

IV. ENVIRONMENTAL CONSEQUENCES

A. All Alternatives - Direct, Indirect, and Cumulative Effects

Section 7 of the Wild and Scenic Rivers Act is applied if a project requires construction within the bed or banks of the designated river. Examples of water resource projects include dams, fish habitat structures or boat ramps. No water resources projects are proposed in any alternative; therefore, none would affect the free-flowing condition of the Chattooga Wild and Scenic River.

All alternatives and past, present and foreseeable projects (listed in Table 3.1-1) are not water resources projects; therefore, the free-flowing conditions of the upper segment of the Chattooga WSR and the entire Chattooga WSR would be preserved.

3.3.2 WATER QUALITY

I. SUMMARY OF FINDINGS

The proposed Southern Appalachian Farmstead (SAF) project is generally located in an area noted for high water quality. Currently, there is little ground-disturbing activity in the area and drainage ditches are generally well vegetated. Stream margins have grown back to brush and trees and are relatively stable. Some of the original cleared farmstead area has reforested naturally. However, past land uses decades ago have resulted in erosion, sediment and alluvial deposits in the river. Existing roads are in relatively poor condition and in some cases, have water flowing on or across them. Farming practices that cleared most of the trees from the floodplain, constructed drainage ditches and very narrow buffer strips along the Chattooga River may have contributed to past bank erosion and channel separation that left a small island in the Chattooga River in the vicinity of the ditch outflow.

There are no obvious sediment sources from existing wildlife openings or past farmstead activities that appeared to be delivering excessive sediment into the Chattooga River. A recent project to remove bamboo, a non-native invasive species, from a section of the river through cutting, herbicides and burning has not led to any additional sedimentation. The proposed project area is currently not having any substantial effect on Chattooga River water quality.

A non-significant Forest Plan amendment would establish 40 foot buffer widths along either side of streams, seeps, springs and man-made ditches within this project. Construction and vegetation clearing would be limited within this 40 foot zone. The buffer (also called a streamside management zone) is described in *South Carolina's Best Management Practices for Forestry* (BMP's). By following BMP guidance, impacts to streams from ongoing activities at the farmstead would be reduced by creating an undisturbed to lightly managed area that would provide shading to streams and would help reduce water temperature increases. It would also help reduce sediment and other water quality impacts by protecting stream banks and filtering some of the sediment or other pollutants that may come from project activities.

The Forest Plan amendment would allow the restoration of historic landscape features including historic buildings, gardens, corrals and demonstration agriculture areas under the action alternatives while still providing water quality protection. Work would include clearing trees, stumps and brush, reconstructing roads in the proposed project area, relocating a power line, constructing a parking lot, restrooms and other buildings on the site. Several activities under the action alternatives could temporarily and intermittently influence water quality. These activities include disking, mowing and planting agricultural crops on a regular basis, gardening and road maintenance. Use and corralling of farm animals on site could increase sedimentation and cause minor additions of fecal coliform from animal waste. This would be minimized by using fencing to keep animals out of the streams, springs, seeps, ditches and stream buffers.

Adherence to Forest Plan standards and guidelines, including the proposed non-significant Forest Plan amendment, BMPs and site-specific design criteria would continue to protect water quality in the proposed project area and in this portion of the Chattooga River.

II. Affected Environment

The 1976 *Federal Register* outlines some of the administrative responsibilities of the state and local governments. On page 11853, the *Federal Register* states:

> Each State has a Water Quality agency charged with setting water quality standards and pollution prevention programs. Even though the Chattooga is an interstate river, the State Water Quality classification varies between states. These standards are, however, adequate to protect the aesthetics of the area and health of the users.

The states of Georgia, North Carolina and South Carolina all have responsibility for monitoring water quality in the Chattooga River. Under the Clean Water Act, each state is required to publish a 305(b) monitoring report that summarizes water quality conditions. If a stream does not have high enough water quality to meet its designated beneficial uses, it is listed as not supporting or impaired based on the presence of certain pollutants. Streams that are not supporting their designated beneficial uses are added to the state's 303(d) list of impaired streams.

In addition to its federally designated wild and scenic river status, the Chattooga River and its tributaries have various classifications developed by each state water quality agency. The predominant beneficial use for the Chattooga and its tributaries is fishing, with waters designated as primary trout waters above Big Bend Falls. Below Big Bend Falls, there is a cool to warm temperature transition that results in changes to the trout community.

Sediment is one of the pollutants of concern in the Chattooga River. A variety of measures have been used to address erosion and sediment such as closing roads on Ranger Districts as well as specific efforts to identify pollutant sources such as the Chattooga River Ecosystem Demonstration Project from 1993 to 1995. In 1999, the Chattooga watershed was selected to participate in the Large Scale Watershed Restoration Program by the U.S. Forest Service national office. The goal was to restore watershed conditions on both public and private lands. This followed other earlier efforts to reduce sediment in the river. Numerous projects have been implemented over the years to reduce sediment input to the watershed. The success of this effort is seen in the 2010 303(d) listings for the Chattooga River which indicates that the river is not impaired by sediment. However, sediment issues are perhaps less abundant, but still present and one of the factors that contribute to low biological diversity and productivity impacts.

A. Condition at the Time of Designation

The Chattooga WSR's water quality was identified as a concern in the 1971 Designation Study in a summary of the Clemson Water Quality Study completed by Dr. Gordon Howard:

> Dr. Howard's study indicated that the West Fork and the river down to Highway 28 were free of human waste. The river from State Highway 28 to U.S. Highway 76 recorded a small level of pollutants (MPN-20/100 ml.), but well within the limits for primary contact waters. Below U.S. Highway 76, fecal coliform counts increased measurably (MPM 230-289/100 ml.), to above primary contact standards. The study indicated that Stekoa Creek might be a possible source of pollution into the main river, and suggested further sampling would be desirable.

The 1976 Federal Register noted that high water quality was occurring above Stekoa Creek, which includes the upper segment of the Chattooga WSR. Some water quality problems were occurring from sewage discharge from the town of Clayton, GA into Stekoa Creek. This area is below the SC Highway 28 Bridge.

B. 1996 ORV Report

The 1996 ORV Report describes changes in water quality since the 1974 designation:

> The water quality related to point source pollution on the Chattooga River has improved since the 1970s. There has been a general increase in nonpoint source pollution due to increased roads, development and recreational use within the watershed. The primary water quality concerns within the Chattooga watershed are sediment, fecal coliform levels, and temperature…Some parts of the Chattooga River has impaired water quality for recreational use from elevated fecal coliform and impaired aquatic habitat from sediment. Stekoa and Big Creeks in Georgia are the primary contributors of this pollution. Whetstone Creek is also identified as having elevated pollutants, well above other tributaries. Impacts from sediment were found in most streams throughout the drainage, and are partly due to natural conditions and past land uses.

In the 1971 Designation Study, the 1976 Federal Register and the 1996 ORV Report, Stekoa Creek is mentioned as causing water quality problems primarily due to elevated levels of fecal coliform. Stekoa Creek is downstream of the SC Highway 28 Bridge and is a considerable distance from the proposed Southern Appalachian Farmstead Project Area. It has no impact on water quality of the Chattooga River at the proposed SAF Project Area. A variety of reports and information on water quality and biological indicators of water quality were available for the 1996 ORV Report including Hudy, 1992, Mass, 1993, Hansen et al, 1995, Adkins, 1995, Van Lear et al., 1995, English, 1990, Weber and Isley, 1995.

Since designation, quite a few roads were closed in the 1970s by Andrew Pickens Ranger District. Some of these closed roads had eroded for many years and were deeply

entrenched. Many of the roads within the Chattooga Watershed have been improved or closed to address sediment issues. Several primitive roads that forded the Chattooga have been closed near the River including Earl's Ford, Sandy Ford and Warwoman Ford. Some roads were located adjacent to stream channels and although stabilized to varying degrees, continue to be sources of sediment. Improved road drainage with increased number of culverts, dips or lead-out ditches have helped to limit concentrated water flow and sediment delivery to the streams. These past efforts to close and improve roads benefited water quality. The use of "best management practices" such as leaving streamside management zones and fencing cattle from streams also improved water quality. However, recreation use, timber harvest, temporary and unimproved roads, cattle damage, urban and residential developments and residual effects of past management continue to be sources of sediment to the Chattooga River.

C. Conditions as They Exist Today

The Chattooga River and its tributaries have various classifications developed by each state water quality agency, in addition to the federally designated wild and scenic river status. These classifications including those now applied to the River have changed over the last three decades. Table 3.2.2-1 provides a listing of current state designations in which all recognize the Chattooga River for its status. The predominant beneficial use for the Chattooga and its tributaries is fishing, with waters designated as primary trout waters above Big Bend Falls. Below Big Bend Falls, there is a cool to warm temperature transition resulting in changes to the trout community. The "freshwater" classification status on the lower Chattooga in South Carolina reflects the impacts from Stekoa Creek in that section of River below Opossum Creek to the Tugaloo River, as the "outstanding resource water" classification is not met.

Under the Clean Water Act, each state is required to publish a 305(b) monitoring report that summarizes water quality conditions for state waters. If a stream does not have high enough water quality to meet its designated beneficial uses, it is listed as not supporting or impaired based on the presence of certain pollutants. Streams that are not supporting their designated beneficial uses are added to the state's 303(d) list of impaired streams. When a stream is added to the 303(d) list, a total maximum daily load (TMDL) document is often produced that outlines the levels of pollutant loading that allow the stream segment or water body to support its designated beneficial uses. Each state has a different agency responsible for producing the 305(b) report. The South Carolina Department of Health and Environmental Control, the Georgia Environmental Protection Division and the North Carolina Division of Water Quality are the state agencies with responsibility for the Chattooga River Watershed.

Table 3.2.2-1 State Water Classifications and Water Quality Standards

State	Segment	Classification	Standard
Georgia	Chattooga River from Georgia – North Carolina state line to Tugaloo Reservoir	Wild and Scenic	There shall be no alteration of natural water quality from any source.
	West Fork Chattooga from confluence of Overflow Creek and Clear Creek to confluence with Chattooga River (7.3 mi.)	Wild and Scenic	There shall be no alteration of natural water quality from any source.
North Carolina	Chattooga River from source to North Carolina – Georgia state line	Outstanding Resource Waters (ORW)	Water quality conditions shall clearly maintain and protect the outstanding resource values. The following undesignated tributaries to the Chattooga R. shall comply with the same ORW standards: see below (*)
South Carolina	Chattooga River from confluence with Opossum Creek to Tugaloo River	Freshwater	Turbidity not to exceed 50 NTU provided existing uses are maintained. See SC State Standards for further information
	That portion of the River from North Carolina line to its confluence with Opossum Creek	Outstanding Resource Waters	Water Quality conditions shall be maintained and protected to the extent of the Department's statutory authority. Numeric and narrative criteria for Class ORW shall be those applicable to the classification of the water body immediately prior to reclassification to class ORW, including consideration of natural conditions.

*Note: The following NC tributaries shall comply with the same Outstanding Resource Waters standards: North and South Fowler creeks, Green and Norton Mill Creeks, Cane Creek, Ammons Branch, Glade Creek and associated tributaries. Source: GA EPD; SC DHEC; NC DWQ.

1. Chattooga Watershed and Total Maximum Daily Loads (TMDLs)

A TMDL specifies the maximum amount of a pollutant that a water body can receive and still meet water quality standards. It also allocates pollutant loadings among point and nonpoint pollutant sources. In 1996, the EPA entered into a settlement agreement with plaintiffs, Sierra Club et al., concerning TMDLs for Georgia. Sediment is one of the pollutants of concern that is highlighted throughout Georgia's settlement agreement. As part of the settlement agreement, EPA completed a water quality assessment for all lands in the Chattooga Watershed. Results of the assessment were used to determine if any stream reaches in Georgia were impaired due to sediment concerns. Stream reaches in South Carolina and North Carolina also were sampled, but results were forwarded to the appropriate state water quality agency for any further action. EPA only added impaired streams to the 1998 Georgia 303(d) list because of the GA settlement agreement requirements.

In Georgia, eight stream reaches in the Chattooga Watershed were placed on the 303(d) list in 1998 and 2000 due to "excessive sedimentation," "habitat" or "biota" impairment. A TMDL was developed to address these parameters in 2001, and currently these streams are no longer on the Georgia 303(d) list for sediment as the cause of impairment.

In 1999, the Chattooga Watershed was selected to participate in the Large Scale Watershed Restoration Program by the U.S. Forest Service national office. The goal of this five-year program was to restore watershed conditions on both public and private lands for large watersheds, and further to create a community-based restoration process that could be expanded beyond the initial thirteen demonstration watersheds. This project followed previous Chattooga River Watershed projects including U.S. Forest Service Chattooga River Watershed (CRW) Ecosystem Management Demonstration Project (1993–1995) and EPA's TMDL Settlement Agreement for GA (1996–1999). Various USFS activities inventoried and provided a summary of available information on water quality within the Chattooga River Ecosystem Demonstration Project (Hansen, 1998). The issue of sediment (excessive sedimentation or aquatic habitat degradation) was recognized by both these earlier projects with some abatement projects; but the Large Scale Watershed Restoration Project (LSWRP) provided increased funding and collaborative support to implement on-the-ground projects in all three states to address sediment problems and related effects. Table 3.2.2-2 summarizes the LSWRP improvements through the year 2002. These projects have improved water quality and aquatic habitats throughout the watershed, but the issue of excessive sedimentation requires continued attention by all landowners or land managers in the Chattooga Watershed.

Table 3.2.2-2 Summary of Restoration Actions

Restoration Action	Total (unit)
Trails Rehabilitated	150 miles
Roads Rehabilitated	81 miles
Heavy Road Maintenance	319 miles
Illegal ATV Trails Re-vegetated	80 acres
Recreation Sites Rehabilitated (camp sites)	23 sites
County Roads Rehabilitated using Wyden Amendment	24 miles
Streambank Stabilization	1,250 feet

As of the 2010 303(d) listings for all three states, sediment is not the cause for listing. All streams in the Chattooga River watershed in North Carolina are currently supporting designated beneficial uses, although in 1998 Norton Mill Creek was impaired by sediment. By the following reporting cycle in 2000, Norton Mill Creek was removed. In South Carolina, all streams are also supporting designated beneficial uses including the area adjacent to and upstream from the proposed SAF. However, sediment continues to be an issue or concern to address with many types of activities and land use. Several streams in Georgia including Chechero, Pool, Roach Mill, Saddle Gap, She, Stekoa, Warwoman Creeks are not supporting designated uses, have had some TMDLs implemented, but continue to be on the state's 303(d) list for fecal coliform bacteria and impacts to biota, specifically the macroinvertebrate community. It should be noted that ongoing efforts of the Chattooga Conservancy, Trout Unlimited, the City of Clayton, GA, various landowners and community interests have been working to identify and reduce specific fecal pollution sources in the Stekoa Creek subwatershed. Various EPA and other grants have been obtained to conduct water quality sampling to improve some of

stormwater and waste collection and distribution lines associated with the water treatment infrastructure.

2. Sediment

Sediment is the primary pollutant of concern in forested watersheds in the Southeast (Coats and Miller, 1981). Fine sediments (<2 mm in diameter) such as silts and sand are a natural part of streams in this region; however, an excess of stored sediment in stream substrate is detrimental to aquatic habitat. Excess fine sediment in stream systems fills interstitial space between larger rocks and reduces the amount of available fish and macroinvertebrate habitat. Fine sediments also reduce oxygen circulation in reeds and increase difficulty for aquatic organism emergence from substrate materials. Fine sediment enters the fluvial system when moving water erodes detached soils. Fine sediment is detrimental to habitat when the amount of sediment entering the fluvial system is not transported through the system under a normal flow regime. Many of the streams in the Chattooga River Watershed have excess stored sediment from past land management activities as well as the high erosive potential of micaceous soils in the region (Van Lear et. al., 1995).

Unpaved dirt and gravel roads with fine aggregate surfacing and roads with poor surface drainage are the primary contributors to stream sedimentation in the Chattooga River Watershed (Van Lear et al., 1995). In this same report, 2.6 percent of sediment associated with a road based survey was attributed to recreation uses. Efforts to install TMDLs, close or improve roads and the management of impacts from land uses and activities by applying BMPs can improve water quality in the Chattooga watershed.

3. Fecal Coliform and Biota

Fecal coliform is a detriment to water quality in some tributaries of the Chattooga River but not a substantial concern in the entire watershed. Fecal coliform is a water quality indicator of pollution associated with warm-blooded animals, including humans. Fecal material deposited on the landscape may get into solution during storm events and may move to streams if not absorbed within filter strips or filtered through soil. A variety of sources contribute to fecal coliform including wastes from human, pets, cattle, horses, beaver and other wildlife (Mass, 1993, Hansen, et. al., 1995, 1998). Table 3.2.2-3 lists all of the streams in the Chattooga watershed that are impaired for fecal coliform and for having an impacted macroinvertebrate community. All impacted streams are located farther down in the drainage from the Russell Farmstead site. Impairment for an impacted macroinvertebrate community was determined by benthic macroinvertebrate bio-assessments based on several factors (a multi-metric index). Water bodies were determined not to be supporting use designation if the narrative rankings were “Poor” or “Very Poor.” As mentioned, efforts to identify and improve conditions relative to excessive fecal coliform have been underway within the Stekoa Creek subwatershed.

Regular sampling and updates on fecal coliform issues within Stekoa Creek and tributaries and Clayton, Georgia are made on information available through the Chattooga Conservancy website at www.chattoogariver.org.

Table 3.2.2-3 Fecal Coliform and Biota Impacted Impaired Streams in the Chattooga Watershed

Creek Name	Cause of Impairment	State
Warwoman Creek	FC, Bio M	Georgia
Stekoa Creek	FC, Bio M	Georgia
Tallulah River	FC	Georgia
Scott Creek	FC, Bio M	Georgia
Saddle Gap Creek	FC, Bio M	Georgia
Chechero Creek	FC, Bio M	Georgia
She Creek	FC, Bio M	Georgia
Roach Mill Creek	Bio M	Georgia
Pool Creek	Bio M	Georgia
Law Ground Creek	Bio M	Georgia

Note: FC=fecal coliform, Bio M= biota impacted macroinvertebrate community
Georgia's 2010 Integrated 305(b) and 303(d) list)

Water quality information is contained in various water quality reports developed within the Chattooga watershed (including Howard, 1971, Maas, 1993, Van Lear et. al., 1995, Hansen several 1995-1998, EPA, 2001). Reports on various indicator species such as macroinvertebrates (English, 1990, Weber and Isley (1995), mussels (Williams, 1995) and fish (Hudy, 1992) have also been used to identify and confirm water quality issues.

III. Existing Impacts to the Environment

The proposed Southern Appalachian Farmstead (SAF) project is generally located in an area noted for high water quality. None of the 303d/305b listed streams are connected to the proposed SAF proposal. There is a limited direct linkage from the farmstead area except through a couple of small streams and the ephemeral drainage ditch from the proposed project activity to water quality issues within the Chattooga River. Most of the water influencing the Russell Farmstead area itself does not come from the Chattooga River, but comes from drainage from Russell Mountain and adjacent slopes. The exception is a portion that is within the 100-year floodplain, so in these rare flood circumstances, the Chattooga River influences the water conditions on the floodplain portion of the farmstead. A portion of the surface and subsurface water coming from the 132 acre drainage below Russell Mountain flow through this area to the Chattooga River, but it is a very small percentage of total flow in the Chattooga River. In addition, some springs and seeps produce flow in the farmstead area. The amount of sediment from the farmstead vicinity is also minute in comparison to the total sediment loading within the Chattooga River. Use of Forest Plan standards and guidelines, BMPs and site-specific design criteria would be implemented to reduce pollutants from entering the springs, seeps, ditches, tributaries and the Chattooga River.

IV. Environmental Consequences

A. Alternative 1 - Direct and Indirect Effects

Current management at the Russell Farmstead site intermittently influences local water quality due to erosion in the tributaries and ditches leading to the Chattooga River. These activities include regular mowing within the wildlife opening and relatively poor conditions associated with the local access road. Water currently flows on or across the road in places. However, ditches and stream margins have revegetated naturally and much of the original farmstead area that was once cleared of forest historically has again reforested due to no activity. More detail analysis relative to the floodplain, wetland and riparian conditions can be found in section 3.4.2 of this EA. The current condition of the area is not substantially affecting water quality in the Chattooga River.

Alternative 1 has a baseline soil erosion of approximately 36 tons and seven tons of sediment production per year based on the average rates for the current land uses on the 21.6 acre analysis area. Based on the average on-site conditions, this amount of sediment would be dissolved in 660,000 tons of water (based on a water yield of 45 inches and a drainage area of 132 acres for the Russell Mountain to the Chattooga River for this vicinity) resulting in an average concentration of sediment of about 10 parts per million. Under normal as well as some storm circumstances, this would be difficult to detect, but the concentration would rise during severe storm events, so there may be temporary periods where the water looks turbid.

The watershed area for the West Fork and Upper segment of the Chattooga for this site is about 124 square miles or about 80,000 acres, which would produce about 400 million tons of water yearly or 4 billion per decade. The seven tons of sediment from the proposed project area each year from current activities diluted in 400 million tons of water adds about 0.02 parts per million and would not be detectable.

B. Alternative 1 – Cumulative Effects

The West Fork was mentioned in the aerial survey of bottom substrates as contributing a massive load of fine sediments to the Chattooga (Van Lear et al, 1995). Erosion and sediment sources exist upstream, and most tributaries within the West Fork have substrates dominated by sand size particles (Hansen, 1998). Other tributaries with sediment issues or some indicators in the upper segment of the Chattooga were Reed, Ammons Branch, Cane, South Fowler and Lick Log creeks.

Sediment and fecal coliform input sources upstream from the proposed project area come mainly from roads, recreational activities, urban areas, pastures, gardens, homes, golf courses and small farms. Streambank and erosion of old logging roads are other sources of sediment.

The wildlife openings are periodically mowed as is an area around the home site and access road to keep them in an open condition. Highway 28 and the power line are both maintained by mowing and tree trimming. These activities do cause some minor soil disturbance to a confined corridor causing some minor erosion and sedimentation. The upper part of the field is also used as a staging area for trout stocking resulting in light truck use of the area which also can cause some minor erosion and sedimentation. In the last few years, a non-native invasive stand of bamboo was treated with herbicide and then burned. The intent was to restore native-vegetation/plant communities in the area. A project is planned to restore giant cane (a native species) in a portion of the proposed project area. Future activities in the area would include the replacement of the Highway 28 bridge. These projects may have minor short-term impacts on water quality by delivering minor amounts of sediment to the river.

Restoring native vegetation and associated plant communities would lead to stable plant cover that would help reduce soil erosion and sedimentation into the Chattooga River in the long-term.

Other ongoing activities in the area that have the potential to have minor impacts on water quality include recreational activities such as, but not limited to, hiking and fishing trails. Camping along the river has some potential to expose, disturb and compact soils, damage trees, contribute solid or other waste materials and start fires. Many of these items are successfully mitigated with facilities and camping guidance.

Sediment and some minor fecal coliform loading within the Chattooga River would continue from roads, recreation, urban areas, pastures, gardens, homes, golf courses, timber harvest, small farms and other activities. Current land use activities for the area from Highway 28 and above for the watershed are contained in the project file. However, most of the concerns associated with fecal coliform loading in the Chattooga River are well below the Russell Farmstead and associated with the streams mainly in Georgia that have extensive urban development such as Clayton, GA in the Stekoa Creek watershed.

Erosion and sediment assumptions, observations and calculations indicate impacts from the deforestation and drainage of much of this area for farm operations, later conversion of abandoned cultivated or deforested lands to wildlife opening and forest. Other contributors to sediment include the stage line road, Highway 28 and natural instability of the Brevard soil type with some potential and well as indications of earth slumping and sliding.

Impacts from past sediment sources are expected to continue from existing roads, past logging and other practices that placed skid roads along stream margins and have altered stream channels. A listing of past, present and reasonably foreseeable projects that are occurring in the upper segment of the Chattooga River (above Highway 28) are listed in Table 3.1-1. Renewed interest and direction to address water quality through TMDLs, BMPs, watershed improvements and other efforts are expected, as sources are identified.

C. Alternatives 2 and 3 - Direct and Indirect Effects

Alternatives 2 and 3 would double the levels of erosion and sediment within the proposed project analysis area, which may have some temporary minor effects within the proposed project area, but these would not be detectable within the Chattooga River.

In addition, it is unlikely that there would be any notable long-term effects to water quality at the proposed project site and the Chattooga River by following forest plan standards and guidelines, BMPs, site-specific design criteria including implementation of measures in the non-significant forest plan amendment.

Minor temporary to intermittent increases in sediment and fecal coliform can be expected to occur in the small tributaries within the farmstead activity area, especially during initial vegetation clearing to restore farm landscapes, cultivation, construction and reconstruction of buildings and smoothing out surfaces for buildings, parking lot construction and road reconstruction and maintenance. Connected actions with potential sediment impacts to streams, seeps, ditches, springs and the Chattooga River include power line relocation, temporary roads, logging decks and other activities associated with initial construction in the proposed project area.

To reduce temporary sediment and other pollutant impacts a number of design criteria have been developed for this proposal. Buildings and the modern vault toilets would be located outside of the 100-year floodplain. In addition, a well system and septic tank would be located on the south side of Highway 28 out of the 100-year floodplain and outside the streamside buffers. Also, the well, septic tank and drain field would meet state construction standards. This would reduce the potential for sediment and other contaminants (such as sewage, fecal coliform and herbicides, etc.) being delivered to the proposed project streams, springs, ditches and seeps and to the Chattooga River.

Most of the parking lot would be located outside the 100-year floodplain. In addition, the parking lot would be constructed in a heavily forested area and would avoid constructing ditch lines that direct water into streams or the Chattooga River.

All construction, reconstruction and restoration activity would use erosion control practices such as, but not limited to, erosion control fences to trap soil particles before they can be delivered to streams and as a preventative measure during farmstead operations. In addition, use of BMPs, Forest Plan standards and guidelines during logging activities (including location and design of skid trails, temporary roads and landings) would minimize soil disturbance and reduce sediment delivery potential to streams. Potential for sediment delivery to the Chattooga River would be reduced by including site-specific design criteria that do not allow for any disturbance other than from a small portion of the parking lot. Seeding and mulching would be required in recently disturb areas during construction and as a cover crop when agricultural fields and gardens are not being used.

A non-significant Forest plan amendment would allow restoration of historic farmstead landscapes in this area by reducing riparian corridor widths and permitting the restoration of a farm landscape consisting of pastures, gardens, buildings, livestock and agricultural areas.

Insofar as the forest has recovered to some extent from past actions, measures would be taken to meet BMPs to protect water quality. Perennial and intermittent streams would be managed to maintain bank stability and avoid activities that deliver sediments and other pollutants to the Chattooga River.

One element of the non-significant forest plan amendment is to maintain a minimum vegetative cover within the 40-foot streamside zone along perennial, intermittent, springs and seeps in the proposed project area following BMP direction. This would maintain high absorption capacity, ground cover and filtering capacity of the soils along stream banks. The roots from trees and other vegetation add stability to the bank, especially during periods of high water flow. This would reduce the potential for channel erosion and protect water quality. A channeled ephemeral stream on the south side of Highway 28 would have a standard 25 foot Forest Plan buffer on either side of the channel consistent with the Sumter RLRMP.

The non-significant forest plan amendment would allow limited tillage of agricultural fields. Plowing of the fields when they are saturated or too wet as to cause excessive puddling, rutting, compaction or clodding would not be permitted. This would reduce adverse sediment effects. Plowing would be limited to periods when the soils are below field capacity[12]. At this point, the soil surface is firm to walk on and traffic with horses and equipment can be done without bogging down or rutting. This would reduce the potential for overland flow of water on freshly exposed soils. Overland water flows during heavy rain storms can produce enough velocity to pick up soil particles and deliver them to the streams and the river as sediment. Likewise, limiting herbicide use to periods of minimal rainfall reduces the potential of contaminated water being delivered to streams, springs, seeps, ditches and the Chattooga River.

Roads would be minimally reconstructed to support initial move-in of equipment for construction work. Project roads would support light service traffic and for periodic use by period-era farm and transportation equipment after construction is completed. Activities would include, but not be limited to, clearing of vegetation, removing stumps, placing and compacting fill, spot gravel, culvert cleaning and placement of aggregate rock material on the road surface to prevent rutting of the surface. Use of temporary spanning structures over streams during construction work and limiting the number of stream crossings during farmstead operations would reduce the potential for sedimentation to streams. These

[12] **Field capacity** is the amount of soil moisture or water content held in soil after excess water has drained away and the rate of downward movement has materially decreased, which usually takes place within 2–3 days after a rain.

structures would help prevent deterioration of stream banks and channels. Drainage structures would be used to direct water off road surfaces in small amounts usually away from stream channels and ditches into vegetative areas. This would help divert flow toward the filter strip to trap soil particles before they can be transported into streams and the river as sediment.

Fencing would be used to keep livestock outside the 40-foot zone of streams, springs, seeps, ditches and the river. This would reduce the potential for fecal coliform contamination in streams, bank erosion and vegetation loss by farm animals. This would reduce impacts that animals may have on sediment delivery to streams and the Chattooga River by keeping stream banks and channels relatively undisturbed.

Cultivated areas would generally be limited to slopes of four percent or less to limit erosion and sediment. Design criteria such as contour plowing, leaving vegetated strips or added stabilization and erosion control measures would be used if steeper areas are included. This would reduce the potential for soil erosion and sedimentation. Activities would include some conversion of forest to farming practices, which could include removing trees, stumping, plowing, disking, rooting, piling and burning of debris if not hauled away. Use of streamside management zones would reduce the amount of sediment that would reach the Chattooga River or other streams or drainage ditches.

It is estimated that approximately 37 tons of soil erosion and eight tons of sediment would be generated annually from project activities over the decade analyzed. These levels were adjusted with reduced Sediment Delivery Ratio (SDR applied was 20%) because the slopes are less than normal for mountain conditions, but do suggest that during some intense storms, turbidity in the streams on site would increase temporarily. Based on the average on-site conditions, there would be an average concentration of sediment increase of about 69 parts per million from project activities. Under normal non-storm circumstances, this may be difficult to detect, but the concentration would rise during storm events, so there may be temporary periods where the water looks turbid.

The effects from alternatives 2 and 3 plus current levels mentioned in Alternative 1 produce about 73 tons of erosion and 15 tons of sediment each year for the 21.6 acre analysis area. Based on average water yield of 108,000 tons, the average sediment concentration on-site would be 135 ppm. Most of the increase is from farm cultivation, road construction or reconstruction. Under normal non-storm circumstances, the increases in sediment might not be detectable in turbidity or by inspection of the channel substrate. During storm events, the concentration is going to be double current levels, so there may be temporary storm periods where the water looks very turbid.

Relative to impacts to the Russell Mountain drainage of 132 acres that produces 660,000 tons of water each year, the average concentration of sediment from the proposed project area would increase from the current 10 ppm concentration in this drainage another 12 ppm to a total of 22 parts per million. Under normal non-storm circumstances, this level may be

difficult to detect, but during storm events, the water may have short periods that look turbid.

For the West Fork and Upper segment of the Chattooga watershed adjacent to this site (124 square miles) per decade the seven tons of current and eight tons of added sediment from the proposed project area each year diluted in 400 million tons of water would increase the sediment concentation in the Chattooga River about 0.04 parts per million and would be nondetectable.

Proposed activities would avoid altering existing springs or seeps beyond their existing uses. There would be minimal additional soil disturbance to maintain the original structure and sediment effects would not be measureable.

The application of herbicide to treat individual plants would not create any discernible ground disturbance or erosion. Additional information on effects of herbicide use is contained in *Vegetation Management in the Coastal Plain/Piedmont Final Environmental Impact Statement* (VMEIS). A herbicide risk assessment has been completed for this project and is found in the project file.

Glyphosate may enter streams during treatment by direct application or drift. In addition, surface or subsurface water runoff could occur from herbicide sprayed on the ground or that leaches through the soil. Herbicide treatment leaves the forest litter, duff and humus layers intact.

Based on the low stream concentrations measured in previous studies, along with dilution and flow of stream, soil absorption and biological breakdown rates, chemical contamination of water quality should be difficult to detect and temporary in nature (Brown and Binkley, 1994).

Drift potential is minimal given manual application methods and adherence to Forest Plan standard FW- 43 for herbicide droplet size and weather conditions relative to foliar applications. Peak concentrations of some herbicides in small, headwater perennial streams due to drift or runoff may range up to 0.050 ppm in some cases (VEGEIS). Herbicide concentrations to be used are the lowest concentrations to be used to be effective in treating woody vegetation. Potential herbicide concentration in streams is proportional to application rate. These concentrations pose minimal risk to water quality for public health or aquatic plants and animals. In addition, only scattered treatments would be needed to control vegetation during landscape restoration activities. Herbicide use would be used periodically once brushing vegetation is controlled and farmstead landscape character is developed. Riparian buffer strips on perennial and intermittent streams along with the no treatment buffer along the Chattooga River would also help reduce the potential for herbicide to enter water. Riparian buffers along perennial and intermittent streams, and mixing and dilution rapidly reduce herbicide concentrations delivered by ephemeral streams. Even though glyphosate is moderately persistent and is slow to break-down, this characteristics is offset by its highly adsorption rate (soil bonding) which reduces its

potential for runoff. Selective application does not increase storm flows because plant water use is little affected. It is anticipated that the treatment of undesired plants would have no measureable impact on flow.

D. Alternatives 2 and 3 – Cumulative Effects

The effects described in Alternative 1 apply here as well. When added to the activities proposed in alternatives 2 and 3, there is the potential for a slight increase in sediment and other contaminant delivery to the Chattooga River immediately adjacent to the proposed project site. However, adverse effects would be reduced by following Forest Plan standards and guidelines including the non-significant amendment as proposed, BMPs and site-specific design criteria. The proposed project area is small and its contribution to overall water quality impacts is small as well. This project would not have measureable effects to water quality at the larger watershed scale along the Chattooga River based on sediment and turbidity estimates.

The proposed project along with existing activities and other land uses in the area would produce approximately 73 tons of erosion and 15 tons of sediment each year on the 21.6 acre analysis area. These levels were adjusted with reduced sediment delivery ratio because the slopes are less than normal for mountain conditions, but do suggest that during some intense storms, turbidity in the streams on site would increase temporarily. Sediment levels within the tributaries would be difficult to detect most of the time, and the levels of sediment in the Chattooga River are not going to have any measureable changes.

The sediment generated from the project site equates to turbidity of about 138 ppm. As indicated, the 15 tons/year would be diluted in the flow produced in the drainage from the Russell Mountain. The Russell Mountain drainage of 132 acres would on average produce about 23 ppm (noticeable of slightly turbid waters where the channel bottom can still generally be seen well over a foot deep). Under some intense storm conditions, the tributaries on site could be noticeably turbid. As far as the Chattooga River, which on average has 400 million tons of water each year below the confluence with the West Fork, the average concentration would be about 34 ppb or non-detectable.

There has been limited use of herbicide to treat a two acre site of a non-native invasive stand of bamboo. The additional treatments proposed would not measurably create additional water impacts since the area that was treated is expected to be fully recovered before activities begin in the farmstead area. In addition, the treatments proposed under the action alternatives are short term and would be applied to a limited area. Woody shrubs and vegetation would be treated around building sites periodically over a short time period to restore grasses and pastures. The effects of cumulative herbicide use would not be measureable and are separated by time and are of treatments.

3.4 OTHER PHYSICAL RESOURCES

3.4.1 SOILS

I. SUMMARY OF FINDINGS

Overall, the activities proposed in this project would have minimal disturbance on soil resources. Effects would be localized in terms of disturbance from construction and reconstruction activities as well as activities associated with these types of farming practices. A non-significant forest plan amendment would reduce riparian buffers widths in the area to restore the historic open farmstead landscape that originally included agricultural areas, gardens and pastures located around barns and other out-buildings. In addition, it allows the corralling of farm animals on the site.

Alternative 2 would increase soil erosion to 73 tons per year in the analysis area. Erosion would decrease once initial restoration activities such as tree cutting, moving in structures and construction of the parking lot and bathrooms are completed. However, there would be periodic erosion from, pastured animals, farming activities, road use and maintenance activities. Adherence to Forest Plan standards and guidelines including the non-significant forest plan amendment, BMPs and site-specific design criteria would reduce adverse effects to soils in the area.

Erosion potential would be reduced by applying seed and mulch to maintain a stable soil surface once initial construction/reconstruction work is completed. Prudent agricultural practices that include contour plowing and tillage of soils during periods of minimal rainfall would also protect soils. The gardens and agricultural areas would be seeded and/or mulched during periods of non-use and this would reduce the potential for erosion. Use of streamside zones that include maintaining a minimum vegetative cover along perennial and intermittent streams, springs, seeps and ditches would reduce soil erosion of stream banks and channels. Requiring on-site review by Forest Service personnel before any ditches or drainage structures are installed would reduce sources of chronic long-term erosion. Using fences and corrals to keep farm animals out of riparian areas, streams, springs, seeps and ditches would prevent loss of vegetative cover and exposure of soil to erosion. Limiting ground-disturbing activity within 200 feet of the Chattooga River would also reduce adverse effects on soils. Requiring the septic system to meet state and county code requirements would insure that the proper septic system is used for those soil types.

II. AFFECTED ENVIRONMENT

The proposed project area includes a portion of the Chattooga River floodplain and river terrace. The area has been historically farmed from the mid-19th to the mid-20th century. Most of the area is reverting to forest except for the area maintained as a wildlife opening.

Soils within the proposed project area include the Brevard, Toccoa and Transylvania series. Minor amounts of Evard are found associated with forest areas and Highway 28.

A large portion of the soils found within this area consist of the Brevard soil series. These soil types are made of colluvium material which are highly erodible and are susceptible to slippage and slumpage when disturbed. Extra caution should be used when disturbing these soils. Brevard soils on slopes of 7 to 15 percent are fairly well suited to recreation and to engineering uses. It is moderately limited or not ideal for roads, sanitary facilities and small buildings because of slope. This soil is poorly suited to use as road fill because of its low strength (Soil Survey of Sumter National Forest Area, Oconee County, South Carolina, 1985).

Toccoa and Transylvania soils are associated with floodplains and are flat with little concern of erosion. These soils are well suited for farmland. These soils are poorly suited for engineering uses such as roads, buildings, and sanitary facilities because of flooding (Soil Surveys). Soil productivity would decrease overtime in areas were repeated gardens, agricultural crops and pastures occur. These soils are sensitive to compaction and rutting under moist soil conditions.

More detailed information on impacts to soils and information used in the analysis is found in the project file.

III. Existing Impacts to the Environment

Soils at the farmstead have been heavily disturbed from past agricultural use. The soils on the floodplain were most likely farmed extensively. Many areas where livestock were kept were likely compacted and bare. Most of the proposed project area has a vegetative cover but some soils (such as the old stage coach road) are still compacted to some degree. Chronic erosion occurs, especially during storm events within an intermittent stream channel because of excessive road drainage entering the stream from Highway 28. Soils that are in the floodplains have been ditched to facilitate drainage for agricultural crop production. The ditches that were dug in the past are still functioning today and drain the floodplain soils more rapidly than would occur naturally.

IV. Environmental Consequences

A. Alternative 1 - Direct and Indirect Effects

Alternative 1, the no-action alternative would result in a continuation of existing conditions within the proposed project area. There would be no ground-disturbing activities taking place under this alternative. Soils would continue to function as they currently are. Analysis completed in the project file and disclosed in section 3.2.2 indicates a baseline soil erosion level of 36 tons per year in the 21.6 acre project area. Soil erosion rates are generally low given the flat terrain and the large amount of forest, grass and brush on the site.

B. Alternative 1 – Cumulative Effects

The wildlife openings are periodically mowed to keep them in an open condition. In the last few years, a non-native invasive stand of bamboo was treated with herbicide and then burned. Other NNIS have been treated in the area in the past. The intent was to restore native-vegetation/plant communities in the area. A project is planned to restore giant cane (a native species) in a portion of the proposed project area. These projects would cause minor short-term soil erosion. Restoring native vegetation and associated plant communities would lead to stable plant cover that would help reduce soil erosion in the long-term.

Other ongoing activities in the area that have the potential to have minor impacts on soils include recreational activities such as but not limited to hiking and fishing. This is usually associated with user-created and designated trails that cause localized disturbances (displacement and compaction) to soils from foot traffic. Other cumulative sources of erosion in the area are associated with Highway 28 and its continued maintenance. Maintenance of a power line in the area also occurs, but most of the right-of-way corridor is covered with vegetation and contributes little to soil erosion. Replacement of the Highway 28 bridge would have localized short-term effects on soils but would not likely impact soils at the farmstead. Yearly stocking would also have no effects on soils

Alternative 1 does not propose any new ground disturbance. Cumulative effects from past and present activities generally result in a localized loss in soil productivity due to compaction, rutting and/or soil displacement. Activities, on NF, that are reasonably foreseeable would be implemented under the standards for protecting soils listed in the *Revised Land and Resource Management Plan for the Sumter National Forest* (USDA Forest Service 2004a); therefore, cumulative adverse effects to soils from these actions are minimal. Activities on private lands have localized effects to those lands and no cumulative effects would occur to the soil resource from those actions.

C. Alternative 2 - Direct and Indirect Effects

In general, effects from Alternative 2, the proposed action, center on ground-disturbing activities associated with the construction and relocation of buildings, road beds, farming and garden areas, a parking lot, restrooms, land clearing, power line relocation and an increased number of visitors in the area. Compaction and rutting during construction activities would also result in temporary erosion from disturbed soils until these areas are stabilized. It is expected that there would be an increase in erosion from, roads, trails, ditch lines and heavily used areas with increase activity at the farmstead including impacts from farm animals.

Disturbing Brevard soils for growing agricultural crops would result in an increase in erosion and potentially a loss in soil productivity from constant tillage and erosion. Transylvania soils are relatively flat and therefore erosion would not be a concern except during flood events. Soil productivity would decrease if areas are constantly tilled over a long period of time.

The types of restrooms proposed for construction are self-contained and the contents periodically pumped into a waste truck and removed from the site. There would be no effects from construction on this soil type since drain fields would not be needed. However, at the caretaker's residence drain lines would be needed. Brevard soils can support a properly designed septic system drain field. Following state standards for design and installation of both the septic system and the water well system would ensure minimal impacts to soils.

Water yield, surface runoff and overland flow are likely to increase from impervious surfaces such as roof tops, paved and graveled areas, roads and trails. The increase in water yield around these structures could increase erosion from around these sites if not properly installed.

An increase in the number of visitors to the site would increase the amount of traffic on the soils in localized areas. This would increase compaction in heavily used areas and reduce soil productivity within those localized areas.

All construction, reconstruction and restoration activity would use erosion control practices such as but not limited to seeding, mulching, water-bars and erosion control fences to stabilize disturb soils. Restoration activities would include some of the forested area being converted back to the historic farmstead and the relocation of a power line. Connected actions would include timber harvesting, temporary roads and log landings, stump removal, plowing, disking, and piling and burning of debris if not hauled away. Adherence to site-specific design criteria, Forest Plan standards and guidelines and BMPs would reduce soil erosion and compaction. The right-of-way for the power line would be restored and maintained in a primarily grass/shrub condition and would have minimal impacts on soil erosion within three to five years after the proposed project is completed.

A non-significant Forest Plan amendment would allow restoration of historic farmstead landscapes that include pastures, gardens, buildings, livestock and agricultural areas. One element of the non-significant forest plan amendment would be to maintain a minimum vegetative cover within the 40-foot streamside zone along perennial, intermittent, springs and seeps in the proposed project area following BMP direction. Project design criteria would not permit ground disturbance within 200 feet of the Chattooga River other than to establish a parking lot. Use of BMPs and design criteria would minimize soil disturbance and help stabilize these areas quickly following restoration activities, especially along stream banks. The roots from trees and other vegetation add stability to the bank, especially during periods of high water flow. This would reduce the potential for channel erosion and protect water quality. A channeled ephemeral stream on the south side of Highway 28 would have a standard 25 foot Forest Plan buffer on either side of the channel. This would also protect this channel and the stream bank from any soil erosion.

The amendment would allow tillage of agricultural fields in an area that is currently managed as a wildlife opening. Design criteria would limit plowing to times of the year when the area is dry and chances of rain are slight. This would reduce the potential for overland flow of water on freshly exposed soils that can lead to erosion. It would also reduce the potential for soil

compaction under wet conditions. Seeding and mulching would be required as a cover crop when agricultural fields and gardens are not being used. This would help to reduce soil erosion. Land use changes from the current state of no activity to managed gardens, agricultural crops, and pastures would affect the soils within those locations. Over time, repeated tillage and planting of crops in gardens and agricultural crops would reduce organic material and nutrients which would decrease soil productivity. Pasture lands can become compacted over time from livestock and nutrients can be removed.

Roads would be reconstructed to support initial move-in of equipment for construction work. Roads would support light service traffic and for periodic use by period-era farm and transportation equipment after construction is completed. Activities would include but not be limited to clearing of vegetation, spot gravel, culvert cleaning, and placement of material in the road surface to prevent rutting of the surface. These activities can disturb soils and make them prone to erosion in the short-term. Properly functioning drainage culverts and graveled road surfaces can reduce long-term soil erosion. Use of temporary spanning structures over streams during construction work and limiting the number of stream crossings during farmstead operations would reduce the potential for soil disturbance adjacent to streams by reducing the potential for deterioration of stream banks and channels. Drainage structures would be used to direct water off road surfaces in small amounts usually away from stream channels and ditches into vegetative areas. This would dissipate water energy before it can lead to erosion of road surfaces, stream banks and ditch lines.

Site-specific design criteria would include fencing to keep livestock outside the 40 foot zone of streams, springs, seeps, ditches and the river. Keeping animals out of wet areas would protect vegetation and limit soil disturbance from farm animals. This would reduce erosion potential. Without added measures, cultivated areas are constrained to slopes of four percent or less to limit erosion and sedimentation. If plans include steeper areas, mitigation measures such as contour plowing, leaving vegetated strips or added stabilization and erosion control measures would be used.

Permanent change from forest or open areas to structures, roads, and trails would increase the water yield, soil disturbance, water runoff and decrease infiltration of water during the existence and use of the Russell Farmstead. Ditching and drainage structures would be reviewed by forest specialists prior to construction and would be designed in such a way as to reduce concentrated water flow. This would reduce adverse impacts to soil, water and aquatic resources.

An increase in visitation to the area would also increase dispersed recreational activities within the farmstead boundary. These effects along with a decrease in soil productivity would only occur in the localize areas. Adherence to Forest Plan standards and guidelines, BMPs and site-specific design criteria would result in short-term minimal effects to soils in the proposed project area.

Herbicide backpack application methods would specifically target unwanted vegetation and minimize unintentional herbicide application to surrounding soils. There is very little

information suggesting that glyphosate is harmful to soil microorganisms under field conditions, while a substantial body of information indicates that glyphosate is likely to enhance or have no effect on soil microorganisms[13] and does not have any effect on soil productivity. It is strongly adsorbed to soil particles and does not move readily through the soil profile. Soil microbes would breakdown glyphosate. Glyphosate is moderately persistent in soil with a half-life of 47 days. It is resistant to chemical degradation, stable in sunlight, relatively non-leachable, does not volatilize and has a low affinity to runoff.

It has no known effect on soil chemical or physical properties. The *Final Environmental Impact Statement, Vegetation Management in the Appalachian Mountains* provides detailed information on the use of glyphosate and the application methods.

The application methods would specifically target unwanted vegetation and minimize unintentional herbicide application to surrounding soils. Using backpack sprayers for treatments limits the amount of herbicide used by applying it directly to areas needing treatments.

Herbicide used to control unwanted vegetation would decrease the amount of vegetation in the short-term. Vegetative cover minimizes erosion by increasing infiltration and providing soil stabilization. The removal of vegetation as a result of herbicide application would have little impact on water infiltration rates and minimally increases the potential for soil loss through sheet and rill erosion because only small areas would be treated. In addition, remaining vegetation would fill the void and quickly reoccupy the sites including design criteria that use seeding and mulching to cover bare soils. Any erosion impacts from vegetation removal through herbicide use would be short-term and would be greatest immediately following treatment.

D. Alternative 2 – Cumulative Effects

Past, present and reasonably foreseeable actions are listed in Table 3.1-1. Alternative 2 would increase soil erosion to 73 tons per year in the analysis area or 3.4 tons per acre per year. Erosion would decrease further once initial restoration activities such as tree cutting, moving in structures and construction of the parking lot and bathrooms are completed. Implementation of Alternative 2 considered together with past and reasonably foreseeable future activities described under cumulative effects is not expected to have adverse cumulative effects on the soil resource. However, there would be periodic erosion from, pastured animals, farming activities, road use and maintenance activities. Forest Plan standards and guidelines including the non-significant forest plan amendment, BMPs and site-specific design criteria would reduce adverse effects to soils in the area. Project design criteria and adherence to Forest Plan standards including Amendment #2 are a primary factor leading to this determination.

[13] http://fs.fed.us/r6/weeds/**.../Glyphosate**_Ver_2-04_WP_Worksheets.PDF

E. Alternative 3 - Direct and Indirect Effects

Effects to the soil resources would be nearly the same in this alternative as in Alternative 2. However, the quantity of disturbance would be slightly less under this alternative due to a reduction in the number of structures.

F. Alternative 3 – Cumulative Effects

Cumulative effects to the soil and water resources from activities proposed in this alternative would be virtually the same as the cumulative effects from activities proposed in Alternative 2. However, there would be less effects to soils overall due to less soil disturbance and fewer number of structures.

3.4.2 WETLANDS, FLOODPLAINS AND RIPARIAN CORRIDOR

I. Summary of Findings

The ability of the proposed project area to provide functional wetlands has been limited by past land use practices that include converting forest to farmland that included hydrologic drainage and soil cultivation practices. There are remnant wetland areas that would not be impacted by proposed activities.

Floodplains are somewhat elevated in the proposed project area and are expected to only periodically flood. Flooding would be shorter in duration due to current drainage ditches in the area. The proposed action would not alter the current area functioning as a floodplain. In addition, design criteria have been developed that would minimize soil disturbance and prevent facilities from being constructed in the floodplain that could cause river pollution.

Since farming practices stopped, much of the area is regrowing within the riparain corridors with the exception of a wildlife opening that is mowed periodically and a small area around the original farmhouse location. A non-significant Forest Plan amendment would be needed to return some of the riparain corridors to grassland and pastures for livestock. Minimal buffers would be maintained along perennial and intermittent streams following BMP direction. This would result in a reduction of approximately 2.8 acres in areas currently classified in a riparian prescription. The intent is to maintain sufficient overstory and understory cover to provide shade, maintain bank stability and protect water quality.

II. Affected Environment

A. Wetlands

The Transylvania soil series in this area may have been associated with wetlands at one time. Its location in the proposed project area is between the Toccoa soil series sand levee along the Chattooga River margin and the colluvial slope associated with the Brevard soil series. The Transylvania soils are fine textured and less well drained than Toccoa soils. The sandy loam and silt loam alluvial soil types were deposited by the Chattooga River. Wetlands are not typically present within well-drained alluvial bottomlands. However, in this instance, with Brevard colluvial slopes and the adjacent steep slope and headwater tributary areas there are localized springs, seeps and underground cavities that are contributing surface and subsurface flow.

The Forest soil scientist identified signs of an umbric soil layer which is a thick, dark colored, surface soil horizon rich in organic matter within the Transylvania series. It is a hydric soil indicator of poor drainage within this area. The soils have been historically cleared of vegetation, stumps removed, cultivated, mixed and hydrologically modified by extensive

ditching to drain excess water for farming. Although they may have been functional wetlands at one time, the degree of vegetation conversion, hydrologic drainage and soil cultivation would prevent this area from functioning as a wetland, even though some wetland properties are retained. There are seeps, springs and wet areas in the colluvial margins that were noticed in amongst exposed fractured bedrock or locally in small depressions. These areas are saturated for varying periods of time during the growing season and would be avoided with project activities.

Wetland conditions in the mountains are relatively infrequent and these conditions occur in part due to about 1,000 feet of elevation difference between the floodplain and the steep slopes that lead to Russell Mountain. The amount of hydraulic head (water pressure) in the substrate has not only promoted colluvial slumping common to Brevard soil series, but also produced ample subsurface moisture velocity and flow to support springs, seeps and the bottomland (pre-drainage) wetland conditions in the Transylvania series. Although the drained floodplain area would not qualify as wetlands, the area can be intermittently saturated or flooded and activities may have to be conducted under dry or somewhat dry circumstances to avoid impacts.

B. Floodplains

The bottomland soils are mapped as Toccoa soil series along the Chattooga River streambank and levee and Transylvania soil series from the sand levee to the colluvial slope Brevard soil series in the proposed project area. The Toccoa and Transylvania are alluvial soil series within the 100 year floodplain. The fine sandy loam to silt loam alluvial soils were deposited by the Chattooga River. The coarser sands and materials deposit first and often leave a levee along the river margin that may be slightly higher in elevation than the rest of the floodplain. For the most part, floodplains tend to be narrow along the Chattooga River and are seldom flooded, in part due to channel entrenchment consistent with the Rosgen F type channel. A history of logging roads up tributary stream channels, dynamiting river obstructions, and breaching splash-dams to float logs to mills may have contributed to the local deposit of alluvial materials. It is possible the alluvial deposit formed this floodplain was affected by either a splash-dam that was once positioned in the West Fork below the Highway 28 crossing or by excessive sand and silt loading from West Fork sources (Hansen, 1998).

Existing drainage ditches across the floodplain were used by early settlers for farming to move water from the floodplain and speed the soil drainage. Several were noted in the 1938 and later aerial photos of the area. Although the drainage ditches do not affect the extent of flooding, they do affect to some degree the duration of flooding. Ditch locations that lead to the river bank can be a hydrologic weak point of entry, for as the flood recedes, these ditches funnel much of the return flows into a concentrated area, sometimes causing bank weakness, erosion or failure.

C. Riparian Corridor

The riparian areas along with perennial and intermittent drainages managed by the U.S. Forest Service are included in the prescription 11- Riparian Corridors of the Forest Plan. Forest Plan standards FW-1 and FW-2 indicate that Best Management Practices (BMPs) including Streamside Management Zones (SMZs) would be employed for forest management activities (USDA-FS, 2004b). When properly implemented, BMPs have been effective at protecting water quality and associated resources (Adams and Hook, 1993, Adams, 1994, 1996, Jones, 2000). The riparian prescription maximizes protection of the streams and creeks bordering management areas to ensure good water quality and aquatic and riparian habitat throughout the forest. The BMPs are designed primarily for water quality protection during management activities. The widths of the corridors would vary based on the actual terrain surrounding the stream. The general guidelines for boundaries are defined as:

- The 100 year floodplain or low terrace typically with bottomland hardwoods including the Toccoa and Transylvania soils.
- Corridor minimum widths for perennial streams would be 100 feet, 125 feet and 150 feet corresponding to the following slope breaks 0-30%, 31-45%, and 46% plus, respectively. These areas would be maintained in forest cover type, and in the long-term serve as old growth habitat.

Along the Chattooga River, the riparian corridor widths would include the 100-year floodplain or alluvial terrace. Ground-disturbing activities such as farming of the terrace are not really consistent with the riparian corridor prescription intent. However, these activities are localized and historic, maintained to some degree with the existing wildlife opening activities. The forest plan did allow for maintaining existing wildlife openings within the riparian corridor, as long as they are not causing environmental degradation (Plan Standard 11-4). Maintaining distance in separating these ground-disturbing activities from the Chattooga River and tributary streams would help mitigate effects.

A forested streamside zone of at least 100 feet in width along the Chattooga River should be reestablished and maintained as the desired condition (Plan Standard 11-4). Other native vegetation that does well at holding soil under these conditions such as river cane is also a desired component.

Currently, of the 21.6 acres in the proposed project analysis area, 14.5 acres would be within the riparian corridor, which includes the floodplain, perennial and intermittent streams, seeps, springs, ditches and wetlands.

III. EXISTING IMPACTS TO THE ENVIRONMENT

Impacts associated with historic land use and activities are present in varying degrees of intensity within this vicinity and site. The site itself has or may have been influenced by past splash-dams (structures used to float and transport logs in the rivers at the turn of the 20th century), logging, skidding, farming operations that included drainage ditches, stump removal, cultivation, gardening, animal husbandry, stage line, and buildings of various types and function. The West Fork of the Chattooga River combines with the upper segment of the Chattooga River just upstream of the proposed activity but below Highway 28. Sediment sources from the West Fork and upper segment of the Chattooga could have overwhelmed the area, leaving extensive deposits. A splash-dam was at one time located a short distance upstream on the West Fork, and it may have contributed an excess of sediment to the proposed project area. Logging roads and mill activity up Reed Mill Creek and many other tributaries of the West Fork and upper segment of the Chattooga River are known to have influenced early sedimentation. The river and alluvial banks contain numerous signs and sources of past sediments from early timber, road and other practices.

The aerial photos in both 1938 and 1959 indicate that essentially all but a few trees in the 21.6 acre project area were removed from the bottomland and slope below Highway 28. Trees were removed along the stream buffers and left to grow up into brush and a few trees may have been left along the Chattooga River. Aerial photographs from 1972 and 1991 indicate reforestation activities along Highway 28 at the Russell Farmstead site. Disking and other management activities were still occurring on a large portion of the floodplain in this area as well.

Much of the floodplain area continues to be used as a wildlife opening but a portion of the former farm operation above the main stage line has returned to forest. The drainage activity has not affected the extent of the floodplain but the duration of flooding from the river and saturation frequency from rainfall and groundwater sources have been reduced. Changes in the Chattooga River bank in the vicinity of the main ditch outlet might have been influenced from the ditching and thin line of trees along the bank. In addition, the aggradation of river sediments in this vicinity have added to stream bank stress that may have contributed to the channel splitting and island formation that seems to have occurred between 1959 and 1972. The ditch may have contributed to this by weakening the bank from concentrating water flow after flood waters receded to a certain point. There is continuing enlargement of the island with time. A potential mechanism for such a change may have been the flood of October, 1964 that produced the third highest flood of nearly 100 years peak flow record based on the U.S. Geologic Survey (USGS) stream gauge near Clayton at Highway 76. Channel adjustments such as this can occur in floodplains, regardless of activity.

There is some likelihood that the Transylvania soils were historically wetland within the floodplain in this location. Likely water sources that would have fed this wetland area would have been from high rainfall, the nearby maintained water table and flooding of the Chattooga River along with surface and subsurface flow from the upland and colluvial slopes adjacent to this area. The finer texture of the Transylvania silt loam may have also contributed by slowing

drainage. Some of the wetland conditions may still be evident, but the removal of the bottomland hardwood vegetation, drainage and regular mixing of the surface soils have altered the conditions that wetland determination and function are unlikely to be verified with the existing soils, vegetation and hydrology.

Impacts to the Chattooga River riparian corridor occurred in the historic clearing, farming and other activities, as they left an inadequate forested buffer along the river. This resulted in some loss of shade to the river, organic and large woody debris inputs and bank instability. Currently the historic ditches and wildlife openings are maintained in grass cover and are contributing relatively little soil erosion or sediment. The river bank, though sparse in forest cover, seemed to remain somewhat stable from the photos in 1938 and 1959 with some signs of an inner channel bar. Currently, the 21.6 acres includes 5.3 acres wildlife field, 1.4 acres grassland, 0.8 acres power line right of way, 11.8 acres forest and 2.1 acres road. As mentioned, 14.5 acres of the 21.6 acres are within the riparian corridor.

IV. Environmental Consequences

A. Alternative 1 - Direct and Indirect Effects

This area would continue to have limited wetland functions given the past farming and land use history. Localized seeps and springs would be unaltered and surface and sub-surfaces flows would continue. More springs and seeps would be evident during periods of high rainfall events in the area.

Flooding would occur occasionally due to the entrenched nature of the river but would be shorter in duration due to the current drainage ditches in the area.

Riparian corridors would continue to provide habitat for riparian vegetation and terrestrial wildlife and aquatic species. In addition, riparian corridors would provide bank stability and sediment filtering to protect water quality as well as a source of large woody debris and shading to maintain stream temperatures. The existing road into the area would continue to limit the functioning of the adjacent perennial stream.

B. Alternative 1 – Cumulative Effects

The upper segment of the Chattooga River is primarily forested, but has a minor component that includes a variety of land uses including highways, roads, urbanization associated with Cashiers and Highlands, NC, rural and home development, timber harvesting and thinning, golf courses, small pasture and rural farming, gardens, small dams, marketing and industry. Past actions with the watershed such as splash-dams, logging, skidding, stump removal, cultivation, drainage, farming operations to include gardening, animal husbandry, roads, and buildings have had a substantial impact on the Chattooga River and this location. Other past, present and reasonably foreseeable activities are listed

in Table 3.1-1. The exact cause of the Chattooga River splitting adjacent to the proposed project analysis area due to accumulation of inchannel sediment and/or site drainage can only be assumed without more information. Both aggradation by sediment and drainage ditches put stress on streambanks. This alternative has no actions and there could be some positive effects to water quality and riparian conditions associated with doing nothing on this section of the Chattooga River.

The cumulative effects of activities and actions within the the 21.6 acre project area as well as the 132 acre Russell Mountain tributary were addressed in the discussion about the potential of past effects of site drainage on wetlands and Chattoga River bank stability. Perhaps 5-10 acres of this area would have qualified as wetland, prior to land clearing, drainage modifications, temporary camps or settling and farming. Due to the past activities, confirming this may be difficult as soil and plant indicators have been altered and hydrology modified.

In both 1938 and 1959, most of the 21.6 acre project analysis area was deforested and used in various ways for the farm operations. Based on the 2005 aerial photo, about 11.8 acres had reforested and 5.3 acres was maintained in wildlife opening with permanent vegetation. The remaining 4.5 acres were building sites, grassed areas and roads. Although the effects of past deforestation and drainage remain, signs of site recovery to a former state are underway.

C. Alternatives 2 and 3 - Direct and Indirect Effects

The remnant wetland areas would not be impacted by activities at the farmstead. The areas that have been highly modified from past land management practices would not be altered by project activities.

The alternatives would not change the existing functioning of the floodplain as the current ditches would continue to function as they have in the past. There may be some additional drainage from buildings and the parking lot but this is a small part of the area and would not be measureable. There would be no additional erosion of drainage ditches or further impacts on the Chattooga River.

Some temporary or intermittent increases in fecal coliform may be associated with the livestock if stormwater is not adequately contained or the vegetated buffers maintained. These increases, if present would be primarily on-site and no measured change would be noticed in the Chattooga River. The caretakers septic system and modern vault toilets should have no detectable impacts on fecal contaminants in the streams or the Chattooga River. Human wastes would be contained in the vault toilets and disposed of properly. In addition, the restrooms would be located out of the 100-year floodplain reducing the potential for contamination of the area and the Chattooga River.

Pollutants from the roads, parking facility, residence and other improvements would in most circumstance be undetectable or minor. The intent would be for any pollutant excessive leaks or spills to be contained and removed. There is minor potential, but some small risk of pollutants from roads, parking and other motorized public use areas. Soils would in most cases absorb, contain and filter contaminants and aid in their breakdown through bacterial or other means. In addition, although not a desired means of pollutant abatement, absorption and dilution is available in the tributaries and river flow and substrates.

Impacts on riparian corridor function would be minimal since there would only be a 2.8 acre reduction in current riparian buffers associated with the non-significant Forest Plan Amendment. In addition, design criteria 1, 3, 6-21, 24 and 25 would also protect water quality and reduce impacts to aquatic organisms by reducing sediment and herbicide input to streams and by providing for aquatic organism passage. This would help to offset reductions in riparian widths associated with the amendment. Design criteria would be used as needed to prevent, minimize or contain pollutants from reaching streams. Some increases in stream temperature might be experienced within the small streams as a percentage of shade is removed within the riparian corridor to accommodate some activities, but the 40 foot minimum streamside management zone along perennial and intermittent streams would provide some shading and relatively undesturbed, vegetated soil cover important for the filtration of pollutants. Due to the tributaries small size and flow, these have limited influence on conditions within the Chattooga River.

C. Alternatives 2 and 3 – Cumulative Effects

The upper segment of the Chattooga River is primarily forested, but has a minor component that includes a variety of land uses including highways, roads, urbanization associated with Cashiers and Highlands, NC, rural and home development, logging, golf courses, small pasture and rural farming, gardening, small dams, marketing and industry. Past actions with the watershed such as splash-dams, logging, skidding, stump removal, cultivation, drainage, farming operations to include gardening, animal husbandry, roads, and buildings have had a substantial impact on the Chattooga River and this location. Other past, present and reasonably foreseeable activities are listed in Table 3.1-1.

The planned activities associated with the proposed Southern Appalachian Farmstead development are less than what once existed within the watershed as well as this area, and by most would be considered inconsequential to the other land uses and activities within the watershed. None of the alternatives are likely to be producing effects that are measureable to the Chattooga River. Some temporary effects on site are likely to occur during activities, and in conjunction with intense storm events. These would be minimized by mitigation measures such as Forest plan standards and guidleines, BMPs and site-specific design criteria.

The cumulative effects of activities and actions within the the 21.6 acre project area as well as the 132 acre Russell Mountain tributary were addressed in the discussion about the potential of past effects of site drainage on wetlands and Chattooga River bank stability. Perhaps 5-10 acres of this area would have qualified as wetland, prior to land clearing, development and farming. In both 1938 and 1959, most of the 21.6 project analysis area was deforested and used in various ways for the farm operations. Based on the 2005 aerial photo, about 11.8 acres had reforested and 5.3 acres was maintained in wildlife opening with permanent vegetation. The remaining 4.5 acres was road, grass and buildings.

The proposed activity for this area (including the adoption of a non-significant Forest Plan amendment for this project site) would maintain stream buffers consistent with BMPs to help protect water quality. Most of the activities that expose soils are located on relatively flat terrain. Some farmstead activities would occur within the riparian corridor and would be mitigated to the extent feasible to reduce adverse effects in the long-term. Erosion and sediment on-site would increase and be somewhat noted in streams, especially during storm events. Changes in the Chattooga River relative to water quality from proposed actions should not be detected or negligible. Increases in several acres of imperveous surfaces would produce some increased stormwater in the immediate vicinity, but not sufficient to modify water quantity on the proposed project area or to the river.

3.4.3 AIR

I. SUMMARY OF FINDINGS

The amendments to the Clean Air Act establish Class I, II and II areas where emissions of particulate matter and sulfur dioxide are to be restricted. The restrictions are most severe in Class I areas, and are progressively more lenient in Class II and III areas. The Andrew Pickens Ranger District is designated as a Class II area, and it currently meets Class II air standards per the Clean Air Act.

All alternatives would continue to meet air standards.

II. AFFECTED ENVIRONMENT

The Andrew Pickens Ranger District is located in the northwestern corner of South Carolina, in Oconee County. Ellicott Rock Wilderness is located within this district. The criteria pollutants of most concern on the district and forest are particulate matter and ozone. Levels of these two pollutants are measured at air monitoring sites near the district. The two main activities that cause air pollution are vehicular traffic and prescribed fires. Both of these activities emit pollutants that can increase ozone and fine particulate matter concentrations. Fine particulate matter is the leading cause of regional haze (also known as visibility impairment), while ozone can harm sensitive vegetation. Additionally, at elevated concentrations these two pollutants can impair the health of both employees and visitors.

The South Carolina Department of Health and Environmental Control (SC DHEC) operates fine particulate matter monitoring sites throughout the state, including one near the district. Ozone concentrations are currently measured at two monitoring sites. The ozone monitor in Oconee County is adjacent to the district, while an ozone monitor in Pickens County is located 17.4 miles to the east. For additional information on air quality monitoring and data on the Andrew Pickens Ranger District refer to the *2010 Monitoring and Evaluation Annual Report for the Sumter National Forest*, referred to hereafter as the Monitoring Report (USFS, 2011).

III. EXISTING IMPACTS TO THE ENVIRONMENT

Prescribed burning and vehicular traffic are the primary sources of air pollution on the district.

IV. Environmental Consequences

A. Alternative 1 - Direct and Indirect Effects

This alternative has no direct or indirect effects on air quality because there would be no change in current management activities and a special use permit to operate the proposed SAF would not be granted.

B. Alternative 1 – Cumulative Effects

Existing prescribed burning activities would continue within the air shed. Approximately 3,000 acres are prescribed burned annually on the Andrew Pickens Ranger District, Sumter National Forest and 5,000 acres are prescribed burned annually on the Chattooga River Ranger District, Chattahoochee-Oconee National Forest. Currently, all areas of the district meet National Ambient Air Quality Standards (NAAQS) for all criteria pollutants (Monitoring Report). Air quality would continue to be monitored and reported on an annual basis and would be used to detect any changes in air quality. Air quality standards are expected to be met in both the short and long-term under this alternative.

C. Alternatives 2 and 3 - Direct and Indirect Effects

Dust and emissions from heavy equipment and trucks would occur during initial construction, reconstruction, logging operations and other connected actions while preparing the site under the special use permit. These impacts would be for a short time period as the amount of area to be impacted is small (estimated at around 5 acres of the approximately 22 acre site). Work would progress at a methodical rate and be completed in the first year of planned operations. Smoke, dust and other emissions from use of the site by the resident caretaker or during demonstration of daily farm life such as smokehouse operations would be minimal and periodic. No measureable changes in air quality are expected either in the short or long-term. Air quality standards are expected to be met in both the short and long-term under this alternative.

D. Alternatives 2 and 3 – Cumulative Effects

Existing prescribed burning activities would continue on federal land within the watershed as stated under alternative 1. The additional emissions proposed from the action alternatives are both short-term in duration and small in amount. Air quality standards are expected to be met in both the short and long term under this alternative.

3.4.4 CLIMATE CHANGE

I. SUMMARY OF FINDINGS

Climate changes are unlikely to impact the historic interpretation and management of the proposed Southern Appalachian Farmstead. Row crops and garden plots would continue to be grown even with projected warmer and dryer conditions. Growing season for crops and gardens may start sooner and farm visitors may enjoy longer warmer seasons. Some of the potential changes in recreation use patterns include other visitors using the Chattooga River more during the cooler seasons (i.e., during trout fishing). Farmstead management under any of the action alternatives would release non-measureable amounts of stored carbon from farming operations.

II. AFFECTED ENVIRONMENT

On January 16, 2009 the Chief of the U.S. Forest Service directed the national forests to consider climate change during project planning. National forests were directed to consider the impacts that climate change would have on meeting goals and objectives stated in Forest Plans and the effects that the proposed project contributes to climate change.

III. EXISTING IMPACTS TO THE ENVIRONMENT

The US Global Changes Research Program published a 2009 report (USGCRP 2009) on climate changes on different regions. Predictions for the Southeast include: air temperature increases; sea level rise; changes in the timing, location and quantity of precipitation; and increased frequency of extreme weather events such as hurricanes, heat waves, droughts and floods. These predicted changes would affect renewable resources, aquatic and terrestrial ecosystems and agriculture, with implications for human health.

Human greenhouse gas (GHG) emissions, primarily carbon dioxide emissions (CO_2), are the main source of accelerated climate change on a global scale. The Template for Assessing Climate Change Impacts and Management Options (TACCIMO) was used to assess differences among three general circulation models at Oconee County (SC). TACCIMO (USFS 2011) was used to create a report that summarizes the resulting climate change impacts. Climate change, especially climate change variability (droughts and floods), may alter hydrologic characteristics of watersheds with implications for wildlife, forest productivity and human use. This climate change variability may result in long-term and seasonal changes in temperature that could influence ecosystem health and function. These impacts result from both long-term warming and from shorter term fluctuations in seasonal temperature that may interrupt or alter temperature dependent ecosystem processes.

The Chattooga watershed is mostly forested and thus provides a source for uptake and storage of carbon. At the watershed scale, this uptake is substantial but at the larger global scale it is not measureable.

Generally speaking, a warmer and drier climate would reduce cold water (trout) fishing opportunities while warm weather activities may increase (TACCIMO, 2011). As reported by Morris and Walls (2009), climate change impacts could exacerbate current natural disturbances including drought, wildfire, insect infestations and extreme weather. "Changes in vegetation and other ecosystem components (e.g., freshwater availability and quality) caused by droughts, insects and disease outbreaks (Rouault et al., 2006), fires, and storms may alter the aesthetics, sense of place, and other cultural services that the public values." Increased tree mortality sets the stage for increased wildfires which also affects outdoor recreation.

"Weather and climate are key influences on the tourism sector worldwide (Smith 1993, Boniface & Cooper 1994, Perry 2007), affecting the length and quality of tourism seasons and the environmental resources that draw tourists to destinations….".

IV. Environmental Consequences

A. Effects of Climate Change on the Russell Farmstead and the Proposed Southern Appalachian Farmstead

1. Alternative 1 – Direct and Indirect Effects

Informal visitor parking at pull-off areas near the historic Russell Farmstead (primarily by anglers) are likely to continue at current levels. Other recreational visitors (hikers, sightseers, etc.) are likely to use this area for parking only on high use days since adequate parking exists at the highway 28 bridge most of the year. There could be a slight increase in use of this parking site by visitors other than anglers with an increase number of warmer days in the year.

Warmer summers predicted for the East will affect available soil moisture and affect net productivity. Warmer winters could lead to more insect outbreaks in the forest affecting scenic views from the Russell Farmstead along the Chattooga River.

2. Alternatives 2 and 3 – Direct and Indirect Effects

Climate changes are unlikely to impact the historic interpretation and management of the Appalachian farmstead. Row crops and garden plots would continue to be grown even with projected warmer and dryer conditions. Growing season for crops and gardens may be longer.

Longer and warmer growing seasons would likely increase opportunities for the public to visit and participate in farmstead events and enjoy outdoor activities. Farming activities

would take place over a longer time period likely resulting in extended seasons of operation. Impacts to vegetation as a result of increased insect outbreaks may slightly impact scenic views of the valley from the farm.

3. All Alternatives – Cumulative Effects

With the exception of prescribed burning, past, present and reasonably future projects are not sensitive to climate change impacts because of their limited timeframe. Climate change impacts would occur over a much longer period. Prescribed burning activities may occur earlier in the burn season and be of shorter duration due to warmer and drier conditions. Coordination among county, state and federal agencies could address the increasing stresses of drought, wildfire and flooding that would occur within the Chattooga WSR Corridor. Some of the potential changes in recreation use patterns (especially anglers) include the public using the Chattooga River more during the cooler seasons as air temperatures rise.

B. Effects of the Russell Historic Site and the Proposed Southern Appalachian Farmstead on Climate Change

1. All Alternatives – Direct and Indirect Effects

Current management of the Russell Farmstead or the action alternatives would not have measureable effects on climate change.

2. All Alternatives - Cumulative Effects

Current management and the proposed special use permit would not result in measureable changes to carbon storage or result in increase greenhouse gas emissions given the small scale of the proposed project. Management activities such as prescribed burning and thinning could offset some predicted climate change effects by keeping forests healthy and making them more resilient to wildland fires. Forests that are thinned have fewer trees to use the available soil nutrients and moisture and are thus healthier and less prone to disease impacts from insects. In addition, periodic prescribed burning reduces fuel loadings, increases water and nutrients to remaining vegetation and reduces fire intensity.

3.5 OTHER BIOLOGICAL RESOURCES: VEGETATION

I. SUMMARY OF FINDINGS

The vegetation assessment analyzes impacts to vegetation communities in the immediate vicinity of the proposed actions. This includes an analysis of the impacts to proposed, endangered, threatened, and sensitive (PETS) plant species, rare plant communities and non-native invasive plant species (NNIS). Direct and indirect effects on vegetation from the proposed alternatives are due primarily to initial land-clearing activities associated with restoring the historic transportation (current access road to the area) and landscapes, land clearing to create openings for additional structures and parking and trampling of plants by recreation users.

The potential for introducing new outbreaks or new non-native invasive species (NNIS) to the riparian corridors from recreation visitors is not expected to increase under any alternative. Non-native invasive plant populations are already widespread in the area, including autumn olive, Japanese honeysuckle, Chinese privet, tall fescue, golden bamboo, multiflora rose, and kudzu. No new seeding or planting of non-native invasive species would occur. Additional soil disturbance in the area could increase the probability of colonization and spread of NNIS. Recent studies have shown that existing users are already affecting vegetation in the area because of trampling and clearing vegetation around “campfires” and erosion and plant loss along user-created trails. Additional effects, depending on use levels, could increase impacts such as trampling of streamside plants due to increased access.

While direct and indirect effects from the alternatives may contribute to a reduction in the size of certain plant populations, none of the alternatives are anticipated to result in the loss of any existing species.

II. AFFECTED ENVIRONMENT

A. Vegetation Communities

Table 3.5-1 lists the acreage for major vegetation types present within the 21.6 acre area of the proposed farmstead. This table shows that about 54 percent of the area (11.8 acres) is dominated by 30-35 year old pines planted following acquisition by the U.S. Forest Service along with remnant and adventitious hardwoods and shrubs. Historically, these areas included apple orchards, pasture, pens, gardens, lawn and woods. Approximately five acres comprises the NRHP site consisting of nine historic outbuildings, the remnants of three structures destroyed by fire, and the associated yard, gardens and animal pens. Most of these areas are in the process of becoming overgrown with shrubs, trees, vines and other vegetation. Approximately 5.3 acres (25 percent) is part of a larger wildlife opening (grasses and some forbs) maintained by annual mowing. Prior to public ownership this area of the farm was worked to grow crops such as corn, oats and rye. In addition, a narrow strip of riparian bottomland hardwood vegetation, including native giant cane, sycamore, and black walnut, occurs adjacent to the Chattooga River and scattered throughout the floodplain. Remnant

native canebrakes and herbaceous seepage bogs occur within floodplains, but these are of low quality due to long history of human disturbance in the area.

3.5-1. Comparison of Vegetation Types on National Forest System Lands within the vicinity of the proposed Southern Appalachian Farmstead

Vegetation Types	Acres	Percent
Mixed hardwoods/pine/shrub/scrub	2.4	11
Mowed grasses/fields (Wildlife Opening)	5.3	25
Planted Pines	11.8	54
Access Road and Highway 28 (none or minimal vegetation)	2.1	10
Totals	**21.6**	**100**

Acres are approximate

B. Proposed, Endangered, Threatened, and Sensitive Species (PETS)

Several proposed, endangered, threatened, and sensitive (PETS) plant species occur throughout the Andrew Pickens Ranger District of the Sumter National Forest. Wildlife habitat in the proposed Southern Appalachian Farmstead project area consists predominantly of openings that are mowed on a regular basis, with some mixed hardwood-pine habitats, and planted eastern white pine (*Pinus strobus*). Giant cane (*Arundinaria gigantea*) is common in the riparian areas adjacent to the Chattooga River. Several old buildings exist in the proposed project area. That portion of the power line right-of-way that exists in the proposed project area is grown up with woody vegetation but is probably maintained by mowing and/or brush cutting on a regular basis. The proposed project area has a history of human habitation, agriculture and other disturbances. For additional information and descriptions of affected environment for PETS species and associated habitats see the *Final Environmental Impact Statement for the Revised Land and Resource Management Plan, Sumter National Forest* and the 2004 *Revised Land and Resource Management Plan, Sumter National Forest* (Forest Plan).

A Biological Assessment/Evaluation (BA/BE) was prepared to determine whether the proposed Southern Appalachian Farmstead project is likely to affect any PETS species. This BA/BE is included in this EA as an appendix item and includes the list of PETS species for the Sumter National Forest. All species on this list were considered for this BA/BE. Using a step-down process, species and potential habitat in the proposed project area were identified by:

1) Evaluating the location and nature of the proposed project,
2) Considering the species' range, life history, and available habitat information,
3) Reviewing District records of known PETS species occurrences,
4) Reviewing the U.S. Fish and Wildlife Service (USFWS) Distribution Records of Endangered, Threatened, Candidate and Species of Concern (2011), and
5) Reviewing the South Carolina Heritage Trust Geographic Database of Rare, Threatened, and Endangered Species (2011).

The species determined to occur, or assumed to occur due to the presence of potential habitat, in this project are listed in Table 3.5-2.

Table 3.5-2. Proposed, Endangered, Threatened, and Sensitive (PETS) plant species that occur or are assumed to occur in the proposed Southern Appalachian Farmstead project, Andrew Pickens Ranger District, Sumter National Forest, South Carolina.

Species	Ranking
Fraser's Loosestrife *Lysimachia fraseri*	Sensitive
Georgia Aster *Symphyotrichum georgianus*	Sensitive; Federal Candidate
Sun-facing Coneflower *Rudbeckia heliopsidis*	Sensitive

There are no other PETS species or associated habitats that are known to occur or have the potential to occur in the proposed project area.

C. Rare Plant Communities

Rare plant communities are assemblages of plants that occupy a small proportion of the landscape but contribute to plant diversity. The list of plant communities considered rare within the southern Appalachians was identified by the *Southern Appalachian Assessment* and refined using the International Classification of Ecological Communities (NatureServe 2001). The Forest Plan recognizes the following rare communities as occurring on the Sumter National Forest:

- Bogs, Seeps, and Seasonal Ponds
- Riverine Vegetation
- Table Mountain Pine Forest and Woodlands
- Basic Mesic Forests
- Cliffs and Bluffs
- Rock Outcrops
- Glades, Barrens, and Associated Woodlands
- Canebrakes
- Mines

Of these, only two – Riverine Vegetation and Canebrakes – occur within the proposed Southern Appalachian Farmstead project area.

D. Non-native Invasive Plant Species (NNIS)

A non-native invasive species (NNIS) is not native to the ecosystem under consideration and its introduction causes or is likely to cause economic or environmental harm. The U.S. Forest Service (USFS) has identified NNIS as one of four critical threats to our nation's ecosystems. The goal of the USFS, Southern Region, is to reduce, minimize or eliminate the potential for the introduction, establishment, spread and impact of NNIS across all landscapes and ownerships.

It is estimated that both plant and animal NNIS cause major environmental damages and losses that add up to almost $120 billion each year in the United States (Pimentel et al. 2005). Pimentel et al. (2005) also report that about 42% of all federally threatened and endangered species are at risk primarily because of NNIS.

Numerous infestations of NNIS plants have been documented on the Sumter National Forest (Southeast Exotic Pest Plant Council 2009; USDA 2009). NNIS threaten rare communities, habitat for rare and endangered species, timber and wildlife resources, and recreational values. Sites most highly infested by NNIS plants are found along forest edges and openings, including old home sites, closed and gated roads and roadsides, wildlife openings, trail corridors and floodplains. Oswalt (2004) found that 40% of Forest Inventory and Analysis plots sampled in South Carolina contained at least one NNIS plant species, and that sites of high infestation were most often correlated with high moisture and/or high light.

Autumn olive, Japanese honeysuckle, Chinese privet, tall fescue, golden bamboo, multiflora rose and kudzu are already present in the proposed SAF project.

III. Existing Impacts to the Environment

Periodic mowing of the five-acre National Register site has gradually declined over the years following the burning of the house. Most of the changes in vegetation on the entire site have been due to this reduction in maintenance. What used to be grassy yard, pens, and/or fields have been colonized naturally by hardwoods, pines, shrubs and vines. Only the areas immediately surrounding the interpretive sign and a path to the spring house have been mowed in recent years. The 5.3 acres associated with the wildlife opening are mowed about twice every year. Hazard trees are also removed when necessary.

Recent inspections have shown that existing users are already affecting vegetation in the area because of trampling and clearing vegetation around “campfires” and erosion and plant loss along user-created trails. Additional effects, depending on use levels, could increase impacts such as trampling of streamside plants due to increased access.

The state maintains the highway right-of-way and a utility permittee maintains the power line corridor through periodic cutting and/or mowing.

Other impacts occur from foot traffic in and through the area. This includes heritage tourists, sight-seers, anglers and hunters. Most foot traffic occurs on user-created paths and in the open fields.

Fraser's loosestrife occurs in permanent openings located along roads, utility rights-of-way, and river corridors. This species has a high light requirement, especially for flowering. It grows at elevations that range from 1,100 to 3,000 feet. Soils at most sites are mapped as Evard, a strongly acid upland soil that is deep, well-drained, and has a loamy surface and sub-surface. Approximately 1,700 plants from 35 locations were documented on the Andrew Pickens Ranger District in 1999 (Shatley, 1999). There are four known records of Fraser's loosestrife that occur along Highway 28 near the proposed project area. These were inventoried during July 2009. Plants still occur at three of these four sites. One new record of Fraser's loosestrife was detected along Highway 28 near the proposed project area.

Georgia aster is a relict species of the savanna/woodland plant community that existed in the southeast prior to widespread fire suppression and extirpation of large native grazing animals. The majority of the remaining populations survive adjacent to roads, along woodland borders, in dry, rocky woods, and within utility rights-of-way and other openings where current land management practices mimic natural disturbance regimes. Many existing populations across its range are threatened by woody plant succession resulting from fire suppression, development, highway expansion/improvement and herbicide application. There are no records of Georgia aster on the Andrew Pickens Ranger District.

Sun-facing coneflower is a plant that inhabits stream banks, barrens, pinelands and roadsides. It is known to occur on the Andrew Pickens Ranger District along roadsides near Lake Cherokee. The closest know population to the proposed Southern Appalachian Farmstead project area is approximately six miles away.

Riverine vegetation and canebrakes occur along the Chattooga River adjacent to the proposed project area. These rare communities occur as narrow bands between the river and the wildlife openings. There are currently no impacts to these communities from management or public use.

In 2009, an inventory of NNIS was conducted on approximately 81 acres in the Russell Fields area, including the proposed Southern Appalachian Farmstead project area. Table 3.5-3 lists those species that potentially occur on the Andrew Pickens Ranger District. These species were targeted in the 2009 inventory.

Table 3.5-3 Non-native Invasive Species That Potentially Occur on the Andrew Pickens Ranger District, Sumter National Forest, South Carolina.

Common Name	Scientific Name
Autumn olive	*Elaeagnus umbellate*
Bushkiller	*Cayratia japonica*
Chinaberry	*Melia azedarach*
Chinese or Japanese privet	*Ligustrum* spp.
Chinese silvergrass	*Miscanthus sinensis*
Chinese wisteria	*Wisteria sinensis*
Cogongrass	*Imperata cylindrica*
English ivy	*Hedera helix*
Garlic mustard	*Alliaria petiolata*
Golden bamboo	*Phyllostachys aurea*
Japanese honeysuckle	*Lonicera japonica*

Table 3.5-3 Non-native Invasive Species That Potentially Occur on the Andrew Pickens Ranger District, Sumter National Forest, South Carolina.	
Common Name	**Scientific Name**
Japanese knotweed	*Polygonum cupidatum*
Japanese spirea	*Spirea japonica*
Japanese stiltgrass	*Microstegium vimineum*
Kudzu	*Pueraria montana*
Mahonia	*Mahonia* spp.
Mimosa	*Albizia julibrissin*
Non-native roses	*Rosa* spp.
Oriental bittersweet	*Celastrus orbiculatus*
Royal paulownia	*Paulownia tomentosa*
Sericea lespedeza	*Lespedeza cuneata*
Tall fescue	*Lolium arundinaceus*
Thorny olive	*Elaeagnus pungens*
Tree-of-heaven	*Ailanthus altissima*
Tropical soda apple	*Solanum viarum*

The results of the 2009 inventory indicated that there was a low infestation of Chinese privet, autumn olive, and Japanese honeysuckle across the entire 81-acre area; a low infestation of multiflora rose across approximately 51 acres; a moderate infestation of tall fescue across approximately 31 acres; and a high infestation of golden bamboo across approximately two acres.

The areas infested with golden bamboo and tall fescue were treated in 2009 and 2011. The areas infested with Chinese privet, autumn olive, Japanese honeysuckle and multiflora rose were treated in 2010 and 2011. All areas will be monitored after the 2011 treatment and retreated, if necessary, to control infestations.

IV. Environmental Consequences

Effects on vegetation from the proposed action alternatives would be due primarily to initial land-clearing activities associated with restoring the historic transportation avenues (stagecoach road) and landscapes; from land clearing to create openings for additional structures and a parking area; and from traditional farming, gardening and tending operations. Secondary effects on vegetation from the proposed alternatives would be from trampling of plants by visitors and possible unintentional introduction or spread of NNIS, particularly into disturbed areas.

For assessment purposes, the analysis boundary to examine the direct and indirect effects that each alternative may have on vegetation is defined as the 21.6-acre area proposed by the Oconee Heritage Center. This includes the five-acre National Register of Historic Places site and 16.6 acres of the surrounding area needed to accommodate parking, caretaker residence, additional buildings and restored farm landscapes. For the determination of cumulative effects of the alternatives on vegetation, the geographic area being considered is defined as the 21.6 acres of the proposed farmstead and the immediate vicinity as bounded by Highway 28 to the north, east

and south (the caretaker's residence is located just to the south of Highway 28 and is included in the analysis) to the boat ramp and by the Chattooga River to the west.

Past, present and reasonably foreseeable future federal actions in this area consist of the maintenance (mowing) of wildlife openings, prescribed burning associated with proposed river cane restoration, manual and chemical removal of autumn olive and/or other non-native species, use of the upper wildlife opening as a helispot during fish stocking activities, and the maintenance of the power line corridor. Other non-federal actions likely would be associated with the maintenance of Highway 28 (e.g., hazard tree removal) and the possible replacement or relocation of the Highway 28 Bridge over the Chattooga River led by the Georgia Department of Transportation.

A. Alternative 1 - Direct and Indirect Effects

Alternative 1 is current management and is considered the baseline or current condition for comparison among alternatives.

The open, grassy communities associated with the wildlife opening would be maintained in this vegetation type through continued mowing twice a year. The five-acre National Register site would likely continue to transition from open, grassy conditions to a forest community through natural seeding and/or sprouting of hardwoods, pines, and various vines and shrubs. Forest vegetation would continue to be present in the area for the long-term. The vegetation along an in the access road would continue to be mowed and maintained in a grass state for the long-term.

There would be no direct or indirect effects on botanical PETS species or rare plant communities.

Another potential impact on vegetation would be the introduction of additional non-native invasive plant species from recreation users. NNIS tend to be more frequent within riparian areas and increase with greater flood frequency (Brown and Peet 2003). Current recreational users are not known to be causing the introduction of NNIS in this area.

B. Alternative 1 - Cumulative Effects

Current vegetation in the proposed project area will be minimally impacted by past, present and reasonably foreseeable projects in the area. All projects would maintain native vegetation in the area in various successional stages.

Fraser's loosestrife is the only PETS species that has the potential to be impacted. Continued maintenance of Highway 28 right-of-way would promote the species persistence over time by reducing competition from other vegetation that could impact the light requirements of the species.

Riverine vegetation would unlikely be impacted by any activities in the area. Canebrake vegetation communities would be improved and expanded with planned restoration activities. Prescribed burning and NNIS treatments would be beneficial for both these communities by eliminating competing vegetation and creating conditions that foster its development in the long-term.

Ground-disturbing activities, such as road maintenance and mowing and prescribed burning have the potential to introduce and spread non-native invasive plants.

Any additional introduction or spread of NNIS from recreation use would be additive to non-native introductions that occur as a result of other management activities. Projects to remove NNIS would subtract from these additions. However, given the abundance of NNIS in this area, and difficulty of controlling them, it is likely that a net increase in the introduction and spread of NNIS would occur over time with this alternative.

C. Alternatives 2 and 3 - Direct and Indirect Effects

Within the five acres of the NRHP site, most of the vegetation that has encroached since acquisition would be removed using manual and chemical methods. Some trees would be retained to mimic traditional farmstead character and to protect riparian corridor values. To the extent possible, historic locations of the original lawn, gardens, animal pens and pasture would be reestablished and maintained in grassy vegetation by planting non-invasive vegetation and mowing. The roads in the area would be improved slightly but for the most part would be maintained in a condition typical of the era when they were built. They would continue to have low grass and would be periodically mowed if needed.

Within the 5.3 acres of wildlife opening, approximately two to three acres along the western portion would be tilled and plowed using period farm techniques. These areas would be worked to grow period crops such as corn, oats, rye and sorghum. No non-native invasive plants would be intentionally introduced.

Within the remaining approximately 11 acres, up to two acres of planted pines would be removed in the southwestern section using modern methods to construct the proposed gravel parking area. Approximately three acres of planted pine would be removed near the center of the area to establish the historic livestock pastures and pens. These also would be maintained in grassy, non-invasive vegetation, though tall fescue is likely to invade these areas.

In Alternative 2, approximately one acre would be cleared of trees and shrubs in the northeastern section to create an opening for the sorghum mill, furnace and Appalachian farmhouse. In Alternative 3, less than 0.5 acres would be cleared of trees and shrubs to create an opening for the sorghum mill and furnace. These areas would be maintained in herbaceous condition.

Ground-disturbing activities, including timber harvest, stump removal, road and parking area construction, historic building relocation, plowing and mowing have the potential to introduce

non-native invasive plants and increase the probability of spread. However, periodic Forest Plan monitoring of the area would help detect new NNIS or increased in current populations. If necessary, NNIS could then be treated if populations are deemed a threat to native vegetation in the area.

Both alternatives would result in a change in plant community composition to an early successional or agricultural condition, and vegetation would be eliminated from approximately two acres.

Direct effects are not expected to occur to Fraser's loosestrife with the implementation of this project. All of the plants known to occur adjacent to the proposed project area occur along Highway 28 and would not be affected by project activities, including the construction of the parking area, installation of public restroom facilities and relocation of the Blue Ridge Electric power line. There would be no direct effects to Georgia aster or sun-facing coneflower, as these are not known to occur within the proposed project area.

There would be no adverse indirect effects of the proposed action on Fraser's loosestrife, Georgia aster or sun-facing coneflower. By implementing the proposed action, existing habitat would not be altered and there is no potential for new habitat to be created.

As a result of these activities and associated mitigation measures, alternatives 2 and 3 would have negligible direct or indirect impacts on rare communities or riparian vegetation, since existing native vegetation in this area is of a low quality and early successional state.

D. Alternatives 2 and 3 - Cumulative Effects

Alternatives 2 or 3 would result in a net change of approximately 10 acres of national forest from "forest" to "non-forest" conditions on the ground. About seven of these acres would be maintained in grassy vegetation while approximately two acres would be gravel parking and/or roads. These actions combined with past, present and reasonably foreseeable future actions would have negligible impacts on high quality native vegetation. Ground-disturbing activities, such as road maintenance, plowing, mowing, and prescribed burning have the potential to introduce non-native invasive plants, but these are already commonly found on site. Conversion of forest to non-forest conditions could increase the incidence of tall fescue which readily invades wildlife openings in the area.

Fraser's loosestrife is the only PETS species that would be impacted. Continued maintenance of Highway 28 right-of-way would promote the species persistence over time by reducing competition from other vegetation that could impact the light requirements of the species.

Riverine vegetation would unlikely be impacted by any activities likely to occur in the area. Canebrake vegetation communities would be improved and expanded with planned restoration activities. Prescribed burning and NNIS treatments would be beneficial for both these communities by eliminating competing vegetation and creating conditions that foster its development in the long-term.

Any additional introductions of NNIS from recreation use would be additive to non-native introductions that occur as a result of other management activities. Projects to remove NNIS would subtract from these additions. However, it is not likely that a net increase in introductions of other NNIS would occur over time with either of these alternatives. NNIS would continue to be monitored to determine the need for treatments if deemed a threat to native vegetation.

3.6 OTHER SOCIAL RESOURCES

3.6.1 HUMAN HEALTH AND SAFETY (SEARCH AND RESCUE)

I. SUMMARY OF FINDINGS

Recreating on national forest lands is not without risk. Some of the area is and would remain forested while other portions would be cleared of the trees to recreate the landscapes associated with the farm and to create the parking area. Therefore, visitors would be experiencing health and safety risks associated with forested conditions; risks associated with land clearing, construction and reconstruction activities; and risks associated with an operational living farmstead once the historic landscapes are established.

II. AFFECTED ENVIRONMENT

The area where activities are being proposed is described generally as low-lying level floodplain. Remnants of the original farmstead remain on the site including nine buildings that are in various stages of dilapidation. State Highway 28 is immediately adjacent to the area and has a speed limit of 45 mph.

III. EXISTING IMPACTS TO THE ENVIRONMENT

Visitors include heritage tourists who come to view the historic site and hunters and anglers who park and walk through to access the wildlife openings or Chattooga River and sight-seers. Current risks include but are not limited to insect stings, snake bites, falling branches or trees, tripping, stumbling and falling. Injuries may also occur in or around the existing buildings as rotting floors might give way or nails, sharp edges, and splinters are encountered. No accidents or search and rescue operations are known to have occurred in the area. Because roadside parking occurs on both sides of Highway 28, some visitors are crossing the highway on foot.

IV. ENVIRONMENTAL CONSEQUENCES

A. Alternative 1 – Direct, Indirect and Cumulative Effects

Risks associated with insect stings, snake bites, falling branches or trees, tripping, stumbling, falling and cuts from old fencing would likely continue at present levels. Injuries associated with the existing buildings may increase as they become less stable. Search and rescue operations would likely not increase.

Past, present and reasonably foreseeable activities in the area would not likely result in an increase in risks to human health and safety over time. The other activities in the area would involve resource management associated with restoring giant cane, helicopter stocking, non-native invasive species control and maintenance of the wildlife opening and power line right-of-way. There is very low risk to the public and forest workers given the remote nature of the area and the limited traffic at the time of year these activities are likely to take place. Replacement of the Highway 28 bridge would not increase hazards to the public or forest workers at the Russell Farmstead.

B. Alternative 2 – Direct, Indirect and Cumulative Effects

Some of the area is and would remain forested while other portions would be cleared of the trees to recreate the landscapes associated with the farm, place new buildings and to create the parking area. Therefore, visitors would be experiencing health and safety risks associated with forested conditions such as insect stings, snake bites, falling branches or trees, tripping, stumbling and falling. Injuries may also occur in or around the existing buildings as rotting floors might give way or nails, sharp edges, fencing and splinters are encountered. Additional risks associated with land clearing, construction and reconstruction activities would include but not be limited to injuries associated with the use of hand and power tools, vehicles and heavy equipment. Additional risks associated with an operational living farmstead include vehicle accidents, animal bites and minor burns.

While state sight distance minimums would be met for the parking area access, there would be new risks associated with highway vehicles yielding to vehicles turning in or out of the parking area. Risks associated with roadside parking should be eliminated.

Past, present and reasonably foreseeable activities in the area listed in Table 3.1-1, in combination with the actions described in Alternative 2, would not likely result in an increase in risks to human health and safety over time. The other activities would involve resource management associated with restoring giant cane, helicopter stocking, non-native invasive species control and maintenance of the wildlife opening and power line right-of-way. These activities would be scheduled when the farmstead is not open to the public or during off-season times of the year when public access to the site is limited. If needed, signs would be placed along Highway 28 warning others of vehicles exiting and entering the highway. These actions would help reduce risks in the area. Replacement of the Highway 28 bridge would not increase hazards to the public or forest workers at the farmstead site.

Timber harvesting activities and temporary road construction would require the use of heavy equipment (such as dozers, skidders, log loaders and trucks). The use of heavy equipment and the movement of trees and logs present the highest potential for safety risks during harvest activities. There is a risk of injury to contract workers, U.S. Forest Service personnel and recreationists. In accordance with Forest Service Health and Safety Code Handbook (FSH 6709.11), vegetation management activities require all U.S. Forest Service workers to wear safety equipment, including hard hats, eye and ear protection, chaps and fire retardant clothes.

Additional information on the effects of vegetation management are detailed in the *Final Environmental Impact Statement, Vegetation Management in the Appalachian Mountains* (VEGEIS).

For all mechanical treatments in the proposed project area, equipment operators must demonstrate proficiency with the equipment and be licensed to operate it. In addition, a helper must direct the operator where safety is compromised by terrain or limited sight distances (VEGEIS).

The private timber sale contractor conducting the harvest would be responsible for adhering to safety specifications during the entire harvest process.

These requirements include the:

- Installation of temporary traffic control devices on roads and trails open to public travel to warn users of hazardous or potentially hazardous conditions;
- Removal of logging slash from all trails open to the public;
- Development of a specific traffic control plan; and
- Installation of road closure devices, such as but not limited to barricades to control entry to the activity site.

Any risks to workers or the public would be minor and temporary.

The herbicides proposed for use contains the active ingredient glyphosate. Amounts to be used and the herbicide risk assessment can be found in the project file. The herbicide would be applied by direct foliar spray from backpack sprayer equipment.

Herbicide applications have the potential to adversely affect public and worker health and safety. Contractors applying herbicides have the potential to be inadvertently exposed to the herbicide as a result of drift or accidental contact during spraying. They can also be exposed by contact with the herbicide residue on plant surfaces. Since the potential for drift is negligible from this equipment, and since no public forest users are expected to be on-site during vegetation management activities, no direct public exposures are expected to occur.

Workers are at greater risk of direct, adverse effects from herbicide use than the public. Workers, including personnel directly involved in the herbicide applications, have the potential to be harmed as a result of an accidental spill of the herbicide during mixing, loading and spraying. Only herbicide and additives registered by the United States Environmental Protection Agency (USEPA) and approved by the USFS are proposed for use, and only a certified pesticide applicator would train the crew and supervise the application.

Applicators are required to follow regulations established by the Occupational Safety and Health Administration (OSHA). OSHA regulations require that workers personal protective equipment and it must be cleaned. They are required to wear a hard hat with plastic liner, waterproofed boots and gloves and other safety clothing. First aid equipment, including eyewash bottles and wash water separate from drinking water, are required to be on-site during application. Use of protective clothing can substantially reduce worker exposure to herbicides and reduces adverse effects.

Accidental spills of herbicides or additives may pose a risk to human health and safety. Containers of herbicide would be secured in a part of the vehicle away from people, food, and water to prevent tipping and contamination. Trucks containing herbicide or tank mixed herbicide would not be allowed to park within 200 feet of a stream or pond. Equipment would be required to be inspected daily for leaks and proper function. In the event of an accidental spill, the spill plan (FSM 2109.12) would be implemented to contain and clean up the spill and notify the appropriate agencies and individuals.

In accordance with FSH 7109.11, public exposure to herbicides would be minimized by the placement of notice signs at application sites, especially in areas of anticipated visitor use. Monitoring and inspections during and after the proposed project would be used to ensure that proper procedures were followed. Herbicide use would not be expected to harm people in the area due to the use of appropriate control and safety procedures.

C. Alternative 3 – Direct, Indirect and Cumulative Effects

Some of the area is and would remain forested while other portions (slightly more than Alternative 2 to accommodate one additional building) would be cleared of trees to re-create the landscapes associated with the farm, place new structures and to create the parking area. Therefore, visitors would experience health and safety risks associated with forested conditions such as insect stings, snake bites, falling branches or trees, tripping, stumbling and falling. Injuries may also occur in or around the existing buildings as rotting floors might give way or nails, sharp edges, fencing and splinters are encountered. Additional risks associated with land clearing, construction and reconstruction activities would include but not be limited to injuries associated with the use of hand and power tools, vehicles and heavy equipment. Additional risks associated with an operational living farmstead include vehicle accidents, animal bites and minor burns.

Because there would be one less structure in this alternative, there would be slightly fewer risks over time associated with being in a forested setting but more risks associated with the clearing, construction and operation of the farm.

While state sight distance minimums would be met for the parking area access, there would be new risks associated with highway vehicles yielding to vehicles turning into or out of the parking area. Risks associated with roadside parking should be eliminated.

The other activities would involve resource management associated with restoring giant cane, helicopter stocking, non-native invasive species control and maintenance of the wildlife opening and power line right-of-way. These activities would be scheduled when the farmstead is not open to the public or during off-season times of the year when public access to the site is limited. If needed, signs would be placed along Highway 28 warning of vehicles exiting and entering the highway. These actions would help to reduce risks in the area. Replacement of the Highway 28 bridge would not increase hazards to the public or forest workers at the farmstead site. Past, present and reasonably foreseeable activities in the area in combination with the actions described in Alternative 3 would not likely result in an increase in risks to human health and safety over time.

Timber harvesting activities and temporary road construction would require the use of heavy equipment (such as dozers, skidders, log loaders and trucks). The use of heavy equipment and the movement of trees and logs present the highest potential for safety risks during harvest activities. There is a risk of injury to contract workers, U.S. Forest Service personnel and recreationists. In accordance with Forest Service Health and Safety Code Handbook (FSH 6709.11), vegetation management activities require all U.S. Forest Service workers to wear safety equipment, including hard hats, eye and ear protection, chaps and fire retardant clothes. Additional information on the effects of vegetation management are detailed in the *Final Environmental Impact Statement, Vegetation Management in the Appalachian Mountains* (VEGEIS).

For all mechanical treatments in the proposed project area, equipment operators must demonstrate proficiency with the equipment and be licensed to operate it. In addition, a helper must direct the operator where safety is compromised by terrain or limited sight distances (VEGEIS).

The private timber sale contractor conducting the harvest would be responsible for adhering to safety specifications during the entire harvest process.

These requirements include the:

- Installation of temporary traffic control devices on roads and trails open to public travel to warn users of hazardous or potentially hazardous conditions;
- Removal of logging slash from all trails open to the public;
- Development of a specific traffic control plan; and
- Installation of road closure devices, such as but not limited to barricades to control entry to the activity site.

Any risks to workers or the public would be minor and temporary.

The herbicides proposed for use contains the active ingredient glyphosate. Amounts to be used and the herbicide risk assessment can be found in the project file. The herbicide would be applied by direct foliar spray from backpack sprayer equipment.

Herbicide applications have the potential to adversely affect public and worker health and safety. Contractors applying herbicides have the potential to be inadvertently exposed to the herbicide as a result of drift or accidental contact during spraying. They can also be exposed by contact with the herbicide residue on plant surfaces. Since the potential for drift is negligible from this equipment, and since no public forest users are expected to be on-site during vegetation management activities, no direct public exposures are expected to occur.

Workers are at greater risk of direct, adverse effects from herbicide use than the public. Workers, including personnel directly involved in the herbicide applications, have the potential to be harmed as a result of an accidental spill of the herbicide during mixing, loading and spraying. Only herbicide and additives registered by the United States Environmental Protection Agency (USEPA) and approved by the USFS are proposed for use, and only a certified pesticide applicator would train the crew and supervise the application.

Applicators are required to follow regulations established by the Occupational Safety and Health Administration (OSHA). OSHA regulations require that workers personal protective equipment and it must be cleaned. They are required to wear a hard hat with plastic liner, waterproofed boots and gloves and other safety clothing. First aid equipment, including eyewash bottles and wash water separate from drinking water, are required to be on-site during application. Use of protective clothing can substantially reduce worker exposure to herbicides and reduces adverse effects.

Accidental spills of herbicides or additives may pose a risk to human health and safety. Containers of herbicide would be secured in a part of the vehicle away from people, food, and water to prevent tipping and contamination. Trucks containing herbicide or tank mixed herbicide would not be allowed to park within 200 feet of a stream or pond. Equipment would be required to be inspected daily for leaks and proper function. In the event of an accidental spill, the spill plan (FSM 2109.12) would be implemented to contain and clean up the spill and notify the appropriate agencies and individuals.

In accordance with FSH 7109.11, public exposure to herbicides would be minimized by the placement of notice signs at application sites, especially in areas of anticipated visitor use. Monitoring and inspections during and after the proposed project would be used to ensure that proper procedures were followed. Herbicide use would not be expected to harm people in the area due to the use of appropriate control and safety procedures.

3.6.2 SOCIAL IMPACT ANALYSIS

I. SUMMARY OF FINDINGS

The intent of this social impact analysis is to inform agency decision makers and the public of the potential social effects as a result of implementing the proposed action or one of the alternatives [refer to (Forest Service Handbook) FSH 1909.17, Chapter 30 – Social Analysis].

The proposed Southern Appalachian Farmstead (SAF) is located below the Highway 28 bridge within the Chattooga Wild and Scenic River (WSR) corridor. Six social variables were evaluated and consisted of:

1. Values, beliefs and attitudes (VBAs);
2. Lifestyles;
3. Social organization;
4. Population characteristics;
5. Land-use patterns; and
6. Civil rights.

The VBAs were derived from public input during scoping for this project. Generally speaking, the public is concerned with protecting the outstandingly remarkable values (ORVs) of the river and the effects the proposal would have on crowding and congestion, traffic, loss of solitude and recreation capacities in the corridor with the addition of a new user group. Also, there is concern that the proposal could restrict traditional users and create competition for available parking spaces.

Additional analysis of effects on VBAs has been evaluated in the Recreation Section 3.2.1 of this environmental assessment (EA). Concern about solitude is relevant to backcountry experiences in the upper segment of the Chattooga River and is managed by capacity limits that have been established in Forest Plan Amendment #1. Crowding and congestion are related to capacities in the frontcountry at the Highway 28 Bridge Area, as well as at the proposed SAF project area. Capacities in the frontcountry at the Highway 28 Bridge Area also are being managed by capacity limits established in Forest Plan Amendment #1. Capacities at the proposed SAF would be managed by limiting parking spaces in the newly constructed parking area. This parking area would provide parking for traditional users; the bulk of the parking spots would be for farmstead visitors and managed as such. Therefore, new parking spaces would not add additional capacity in the corridor.

Establishment of an SAF would attract tourists and increased use to the area. Use would be restricted to activities at the SAF during periods of operation. Heritage tourism opportunities would increase with limited impacts on existing users (see Recreation Section 3.2.1).

Lifestyles, social organizations, population characteristics, land-use patterns and civil rights would not be affected by any of the alternatives.

II. AFFECTED ENVIRONMENT

The delineated geographic and economic area of consideration is Oconee County, South Carolina which includes the population with the potential to be affected by the alternatives.

A. Social and Economic Overview

People live, vacation and retire in the area of Oconee County (SC) in part due to the nearby natural amenities and the opportunities for outdoor recreation. The results of this analysis of Values, Beliefs and Attitudes (VBAs) show that many people move to this area because of the opportunities for adventure and outdoor challenge offered by the Chattooga WSR.

The Russell Farmstead is located immediately below the Highway 28 bridge within the Chattooga WSR Corridor. This bridge defines the southernmost boundary to what has been termed the upper segment of the Chattooga WSR in a recent Environmental Analysis (EA) entitled "*Managing Recreation Uses in the Upper Segment of the Chattooga Wild and Scenic River Corridor."* Some people expressed concern during public scoping for the farmstead proposal that the addition of "new users" (i.e. living history visitors) and additional capacity (i.e., new parking area) had implications for the "upper river" due to its proximity.

A review of US Census data (QuickFacts, 2010) indicates that the increase in population of Oconee County is somewhat lower than the state average but is still higher than the national average. Furthermore, the average number of people 65 years and older living in the county is higher than the state average, as well as the national average. The information seems to indicate that an older population is staying or moving into the area after retirement. This data confirms earlier assessments that people enjoy the natural environment and are particularly drawn to the Chattooga WSR and its many attributes. Other data suggests that the public takes a keen interest in management and protection of its natural resources. Per capita income and median household incomes are roughly the same when comparing the county to the state as a whole, but both are lower than the national average. The information does not indicate a disproportionate number of women or people below the poverty level compared to the state. National poverty levels are somewhat lower than the county or state average and the number of minority residents is substantially lower than the state or the nation (see Table 3.6.2-1).

Table 3.6.2-1 Comparison of Population Statistics for Oconee County, South Carolina and USA

People QuickFacts	Oconee County	South Carolina	USA
Population, percent change, 2000 to 2010	12.2%	15.3%	9.7%
Population, 2010	74,273	4,625,364	308,745,538
Persons under 5 years, percent, 2010	5.6%	6.5%	6.5
Persons under 18 years, percent, 2010	21.1%	23.4%	24.0
Persons 65 years and over, percent, 2010	19.0%	13.7%	13.0
Per capita money income in past 12 months (2010 dollars) – 2006-2010	$24,055	$23,443	$27,334
Median Household income 2006-2010	$42,266	$43,939	$51,914
Female persons, percent	50.6%	51.4%	50.8%
Minorities, percent	12.2%	33.8%	27.6%
Persons below poverty level, percent, 2006-2010	16.6%	16.4%	13.8%

Information in Appendix F, Social Impacts Analysis and the Limits of Acceptable change as presented in *Managing Recreation Uses in the Upper Segment of the Chattooga Wild and Scenic River Corridor* (USFS, 2012), indicates that the Chattooga River is important to the quality of life for many residents and recreationists. Lifestyles in rural areas are more directly tied to public lands than lifestyles in urban areas. It states, "For the same reasons that residents appreciate the Chattooga WSR corridor, so do tourists." A 1995 report *Desired Future Conditions for the Chattooga Watershed: A Summary Study of Diverse Public Opinions* (Maguire 1995) was completed to assess the public's desired recreation experiences within the Chattooga WSR corridor. The public desires protection and use of natural resources and wants a quality recreation experience. They also want the river to be available to the public but are worried that increasing human populations will increase management conflicts.

Key findings from another report, *Forest-Based Outdoor Recreation* (Cordell and Tarrant, 2002) note the following:

- "At the top of the list of recreation activities in which southerners participate are walking for pleasure, attending family gatherings, visiting nature centers, sightseeing, driving for pleasure, picnicking, viewing or photographing natural scenery, and visiting historic landscapes."

- "To southerners, outdoor recreation is a highly important part of their lifestyle."

- "As forest recreation demands grow, recreation activities are likely to conflict more with each other, especially on trails, in back country, at developed sites, on flat water (large rivers and lakes), in streams and whitewater, and on roads and their nearby environs."

B. Social Variables

The following six categories (FSH 1909.17, 30-34, 33.7) are identified and evaluated for each of the alternatives.

1. Values, Beliefs and Attitudes (VBAs)

VBAs are representative of feelings, preferences and expectations people have for forests and the management and use of particular areas.

The following representative statements are summarized from the analysis of comments received during scoping for the proposed project.

a) The U.S. Forest Service needs to protect and enhance the outstandingly remarkable values (ORVs) of the Chattooga Wild and Scenic River.
b) Effects of the proposed project on resources (forest, forest succession and natural processes) should be evaluated.
c) Consideration needs to be given to the introduction of a new user group (tourist) and the impacts that they would have on crowds, traffic and to current recreational capacities in the WSR corridor.
d) There is no capacity for a new user group.
e) The establishment of the site will encourage vandalism, arson or security problems.
f) The Chattooga River's natural features and the recovery of the biological diversity should be emphasized over past human exploitation of the area.
g) Funding for the proposed project is uncertain and could result in the U.S. Forest Service having to fund the proposed project with taxpayers having to cover expenses.
h) The proposed project could impact trout fishing which is an important recreational and economic activity and should be considered into the site plan.
i) Development at the site could restrict current user's access to the forest and create conflict.
j) The proposal should protect, preserve and restore the original buildings and should include interpretation of Native American use (Chattooga Town) and occupation at the site as well as the local transportation, cultural and agricultural heritage of Oconee County and the upstate area.
k) The proposal should employ local people with an interest in their heritage.

2. Lifestyles

Lifestyles include patterns of work and leisure; customs and traditions; and relationships with family, friends and others. People's lifestyles may be affected by management actions on a national forest through a direct economic relationship such as special-use permits or through indirect economic effects where recreational use of the forest is the foundation for the local tourism industry. Variables under lifestyle include:

a) Types of jobs available; these vary by skills, income, season and business cycle.

b) Percentage of unemployed in the local labor force.
c) Family income and consumption patterns.
d) Size, number, and characteristics of ethnic cultures and subcultures.
e) Existing and incoming occupational subcultures.
f) Recreation preferences, use patterns, and amenity
g) Degree of privacy, isolation.
h) Relationship of lifestyle to infrastructure and forest resources (mill employee, recreationist or retired person).

3. Social Organization

Social organization includes things that satisfy human needs, such as family, school, businesses and city government. The trends of rapid population growth in a region can overwhelm public schools and services. An influx of people with different values can lead to stress among existing residents and conflicts with newcomers. Variables included under social organization include:

a) Community cohesion (degree of unity and cooperation).
b) Community stability (ability to absorb and manage change).
c) Source and focus on leadership.
d) Family and friendship networks.
e) Traditions of mutual trust and aid.
f) Nature and frequency of antisocial behavior, including crime, delinquency, drug and alcohol abuse and vandalism.
g) Child and spouse abuse, fights, rowdy behavior, and other symptoms of stress and anxiety.
h) Infrastructure capacity: housing, schools, utilities, streets and highways, shopping facilities, social services, medical services, parks and other recreation sites.
i) Tax structure and rates; other public revenues.
j) Type, diversity, and membership of service and special-interest organizations in the affected area.
k) Opportunity for effective participation in Federal, State and local governments.

4. Population Characteristics

Population characteristics include the size, rates of change and composition of the population. These characteristics are important when U.S. Forest Service actions change the number or type of locally available jobs, community services or housing options. Variables included under population characteristics include:

a) Number, density and distribution of residents and visitors, including seasonal variations.
b) Age and sex characteristics of residents, immigrants, and visitors.
c) Racial and ethnic composition.
d) Types, rates, and duration of in-migration and out-migration.

e) Available human resources (educational level, talents, skills).

5. Land-use Patterns

Land-use patterns include the types, intensity and spatial distribution of land uses. Forest Service actions may affect the location, density and type of land use. Variables included under land-use patterns include:

a) Existing land uses, such as timber, wildlife habitat, recreation, mining and grazing, and their interactions.
b) Compatibility of proposed changes in use with present uses of the site and adjacent lands.
c) Agency use of fire, herbicides, pesticides; clearcutting practices.
d) Extent of pollution and waste disposal.
e) Sites of historical, cultural or scenic value.
f) Zoning requirements.

6. Civil Rights

Civil rights include the effects of each alternative on civil rights, minority groups, women and consumers. From FSH 1909.17, 33.26 "The phrase 'civil rights' implies fair and equal treatment under the law, both within the agency and in its relations with the public ([Forest Service Manual] FSM 1703)." FSH 1909.17 provides direction on considering the consequences of management actions or policy on protected groups. The U.S. Forest Service participates in special programs to enhance opportunities for equal participation of women, minorities and the handicapped (FSM 1761 and 1762). Variables included under civil rights include:

a) Civil rights implications related to any or all of the variables listed in the above five categories.
b) Barriers to equal access by minorities and handicapped created or removed through the proposed action(s).
c) Past and present evidence of discriminatory practices in the locale and the potential interaction of this with the proposed action(s).
d) Potential for participation as contractors or subcontractors by small business, minority-owned business, small disadvantaged business, and women-owned business concerns in contracts, grants, and cooperative agreements generated by the proposed action(s).

III. Environmental Consequences

Direct, indirect and cumulative effects to socio-economic conditions are described below.

A. Direct and Indirect Effects – All Alternatives

1. Values, Beliefs and Attitudes (VBAs)

VBAs have also been analyzed elsewhere in this EA (Table 3.6.2-2).

Table 3.6.2-2 Effects to the VBAs

VBAs	Analyzed elsewhere
Opportunities for solitude and remoteness	Recreation Section 3.2.1
Overuse	Recreation Section 3.2.1
Patterns of leisure	Recreation Section 3.2.1
The U.S. Forest Service needs to protect and enhance the outstandingly remarkable values (ORVs) of the Chattooga Wild and Scenic River.	Chapter 3
Effects of the proposed project on resources (forest, forest succession and natural processes) should be evaluated.	Chapter 3
Consideration needs to be given to the introduction of a new user group (tourist) and the impacts that they would have on crowds, traffic and to current recreational capacities in the WSR corridor.	Recreation Section 3.2.1
There is no capacity for a new user group.	Recreation Section 3.2.1
The establishment of the site will encourage vandalism, arson or security problems.	Recreation Section 3.2.1
The Chattooga River's natural features and the recovery of the biological diversity should be emphasized over past human exploitation of the area.	ORVs Section 3.2.2 (Fisheries, Wildlife, Botany, Scenery, History and Geology) Project Record – Biological Evaluation
Funding for the proposed project is uncertain and could result in the U.S. Forest Service having to fund the proposed project with the taxpayer having to cover expenses.	Chapter 2-Alternatives, surety bond(s) required as condition of permit
The proposed project could impact trout fishing which is an important recreational and economic activity and should be considered into the site plan.	Recreation Section 3.2.1
Development at the site could restrict current user's access to the forest and create competition for available parking spaces.	Recreation Section 3.2.1
The proposal should protect, preserve and restore the original buildings and should include interpretation of Native American use (Chattooga Town) and occupation at the site as well as the local transportation, cultural and agricultural heritage of Oconee County and the upstate area.	History Section 3.2.4 SHPO Concurrence (project record)
The proposal should employ local people with an interest in their heritage.	Chapter 2-Alternatives – proposed action alternatives would likely provide local employment opportunities

2. Lifestyle

Patterns in work would not be impacted by any of the alternatives. Businesses not related to recreation use on the Chattooga WSR would not be impacted by management actions in the alternatives. No changes in the policy for evaluating special-use permits are proposed. The existing special-use permits for rafting and boating would continue on the lower segment of Chattooga WSR.

3. Social Organization

Families as a whole would not be impacted by any of the alternatives. While some families may agree or disagree with the alternatives, or change their use patterns because of an alternative, the social organization of family would not be impacted. Under any of the proposed alternatives, city/county/state governments would continue to function as they do now. There would be no changes in schools, community services, housing options or most public services (water, sewer, trash pickup, etc.) as a result of the alternatives. Wildfire response and patrols of recreation areas by city, county or state responders are not expected to change in the alternatives.

4. Population Characteristics

Demographics or migration patterns would not be affected by any alternative.

5. Land-use Patterns

County zoning regulations that would affect the location, density or type of land use would not change under any alternative.

6. Civil Rights

Accessibility would not be impacted by any of the alternatives. Recreation management is compliant with the Outdoor Recreation Accessibility Standards so no disproportionate impacts to forest visitors with physical impairments would occur. In addition, no disproportionate impacts to women, minorities, people living below poverty level or forest visitors in general (consumers) are anticipated with any alternative (see Table 3.6.2-1).

B. Direct and Indirect Effects – Alternative 1

Lifestyles

a. Local job opportunities and/or nature-based tourism

No changes to local job opportunities and/or nature-based tourism would occur under current management. Nationwide trends suggest that increased recreation use would bring more

visitors to the Chattooga WSR, and possibly to the area of the Russell Farmstead, particularly those interested in nature photography (Cordell 2010a, b and c). This trend would benefit businesses that provide nature-based services. Because some people retire where they enjoy vacationing, increased numbers of tourists could lead to people either retiring to or building vacation homes in the area.

b. Customs and traditions

Existing customs and traditions of recreating on the Chattooga WSR, and specifically in the area of the Russell Farmstead, would not change.

C. Direct and Indirect Effects – Alternatives 2 and 3

Lifestyles

a. Local Job Opportunities and/or Nature-based Tourism

Locally available jobs may be enhanced by the alternatives at a county level; some local businesses may see limited increases in requests for goods or services. Heritage tourism opportunities in the county would increase and the local tourism industry would be enriched. The Oconee Heritage Center in Walhalla would likely see increased visitation in heritage based tourism due to the attraction of the SAF. This may result in an increase in financial support throught memberships, sales, and donations

b. Customs and Traditions

Because the alternatives would bring more visitors to the local area, some existing customs and traditions of recreating on the Chattooga WSR may be impacted. Historic customs and traditions of the area would be interpreted to visitors through their experiences at the SAF.

D. Cumulative Effects –Alternative 1

Table 3.1-1 lists past, present and reasonably foreseeable actions in the vicinity of the proposed SAF project area. Any projects listed in Table 3.1-1 would be approved only after site-specific analysis determines they would protect the ORVs in the entire Chattooga WSR Corridor. Cumulative effects to socio-economic conditions are described below.

1. VBAs

Past, present and foreseeable activities within the Chattooga WSR Corridor would not change the natural amenities that visitors and migrants value so highly, but could change recreation use patterns slightly. Current U.S. Forest Service management would continue to provide those outdoor recreation opportunities that draw people to the area. Parking capacity

would not change for current recreational users who traditionally use the area by the Russell Farmstead. Additional visitors to the site would fit within current capacities for this frontcountry location. Other special-use permits would also fit within current capacities developed for this area. As use increases, parking lots could become full during high-use times of the year. This may cause some users to become displaced or adaptive management strategies to be used.in the upper segment of the Chattooga WSR Corridor.

2. Lifestyles

Projects listed in Table 3.2-1 would continue to provide outdoor recreation opportunities that reinforce family bonds and friendships. Whitewater rafting and guiding on the lower segment of the Chattooga WSR would continue to draw in tourists.

3. Social Organization

Projects listed in Table 3.2-1 would have a very minor effect on local job opportunities and nature-based tourism, as would any special-use permits approved in the future. Existing guiding and rafting opportunities would continue. There would be no additional demand on Oconee County services. Routine maintenance of roads would slightly improve the area and maintain county services, such as emergency or wildfire response.

4. Population Characteristics

Projects listed in Table 3.2-1 are not expected to impact population characteristics.

5. Land-use Patterns

Projects listed in Table 3.2-1 are not expected to impact any of the land-use patterns variables. Future actions would consider any potential impacts to historic sites or scenery.

6. Civil Rights

Accessibility would not be impacted by any of the past, present or reasonably foreseeable management activities. Recreation management is compliant with the Outdoor Recreation Accessibility Standards so no disproportionate impacts to forest visitors with physical impairments would occur. In addition, no disproportionate impacts to women, minorities, people living below poverty level or forest visitors in general (consumers) are anticipated by Forest Service management activities.

E. Cumulative Effects –Alternatives 2 and 3

Table 3.1-1 lists past, present and reasonably foreseeable actions in the vicinity of the proposed SAF project area. Any projects listed in Table 3.1-1 would be approved only after site-specific analysis determines they would protect the ORVs in the entire Chattooga WSR Corridor.

Cumulative effects to socio-economic conditions are described below.

1. VBAs

Past, present and foreseeable activities within the Chattooga WSR Corridor would not change the natural amenities that visitors and migrants value so highly, but could change recreation use patterns slightly. Current U.S. Forest Service management would continue to provide those outdoor recreation opportunities that draw people to the area. Parking capacity would not change for current recreational users who traditionally utilize the area by the Russell Farmstead. The propose parking lot would provide access to the area for people visiting the restored farmstead and some parking areas would be allocated to traditional users (i.e. anglers who walk down to the river from this area). Allocating parking spaces to traditional users would reduce the potential for competition for parking. Additional visitors to the site would fit within current capacities for this frontcountry location. Other special use permits would also fit within current capacities developed for this area. As use increases, it is anticipated that parking lots could become full during high use times of the year. This may require that permits be adjusted to ensure that use does not exceed established capacities.

2. Lifestyles

Projects listed in Table 3.1-1 would continue to provide outdoor recreation opportunities that reinforce family bonds and friendships. The development of the proposed SAF would provide additional recreation opportunities that could improve lifestyle and job opportunities in the surrounding area. Whitewater rafting and guiding on the lower segment of the Chattooga WSR would continue to draw in tourists.

3. Social Organization

Management actions in these past, present and reasonably foreseeable actions would continue to have a very minor indirect effect on local job opportunities and nature-based tourism, as would any special-use permits approved in the future. Existing guiding and rafting opportunities would continue. If the proposed SAF is approved, it may put additional demand on Oconee County services. Routine maintenance of roads would slightly improve the county's ability to provide some services, such as emergency or wildfire response.

4. Population Characteristics

None of the past, present, and reasonably foreseeable actions are expected to impact any of the population characteristics variables.

5. Land-use Patterns

None of the past, present, and reasonably foreseeable actions are expected to impact any of the land-use patterns variables. Future actions would consider any potential impacts to historic sites or scenery.

6. Civil Rights

Accessibility would not be impacted by any of the past, present or reasonably foreseeable management activities. Recreation management is compliant with the Outdoor Recreation Accessibility Standards so no disproportionate impacts to forest visitors with physical impairments would occur. In addition, no disproportionate impacts to women, minorities, people living below poverty level or forest visitors in general (consumers) are anticipated by Forest Service management activities.

3.6.3 ECONOMICS

I. SUMMARY OF FINDINGS

This project would manage areas with special paleontological, cultural or heritage characteristics as well as protect the Chattooga Wild and Scenic River (WSR) Corridor's Outstandingly Remarkable Values (ORVs). These ORVs are intrinsic and have not been assigned a value in this economic analysis.

The benefit-cost ratio (BCR) for the Oconee Heritage Center (OHC) is greater than one. Costs to the U.S. Forest Service (USFS) are disclosed over the same time period and are primarily associated with permit administration (ensuring that permit requirements are followed to reduce or avoid adverse environmental impacts). There is some revenue to the USFS in the value of the timber removed during landscape restoration activities. The economic analysis provides a means to compare the alternatives.

II. AFFECTED ENVIRONMENT

This analysis focuses on economic effects of the action alternatives. These estimates are based on costs and revenues provided by the OHC and the FS. Costs and revenues disclosed allow a relative comparison between alternatives and are not intended to be all inclusive. Intrinsic values associated with protection and enhancement of the history ORV has not been factored into the analysis.

A benefit-cost ratio (BCR) economic analysis was completed using the "Quick Silver" economic program. A BCR is an economic indicator that summarizes the overall efficiency of a proposed project. A BCR is the ratio of the present value (PV) of benefits of a project expressed in monetary terms, relative to its PV of costs, also expressed in monetary terms. All benefits and costs are discounted to a common base year for analysis (in this case, expressed in 2011 dollars). The analysis allows for changes in values over a ten-year period due to inflation and the interest rate for borrowing money. The net present value is evaluated over the service life of the proposed project (in this case, a ten year period). A summary of the analysis is provided here and the complete analysis is contained in the project file.

III. EXISTING IMPACTS TO THE ENVIRONMENT

There are no costs associated with the current project area beyond current management and protection of the areas heritage assets by the USFS. The wildlife opening is mowed periodically as is the area around the Russell Farmstead. Heritage sites are periodically monitored for vandalism and natural impacts.

IV. Environmental Consequences

Alternative 1 – Direct and Indirect Effects

No costs or revenues would be generated under this alternative.

Alternative 1 – Cumulative Effects

Past projects in the area have included treating non-native invasive species and periodic mowing of the wildlife opening. Routine maintenance activities include mowing along Highway 28 and the power line. The existing wildlife opening is also used for yearly trout stocking of the river using helicopters. Future actions include restoration of giant cane by the U.S. Forest Service and replacement of the Highway 28 bridge in the next five to 10 years by the Georgia Department of Transportation. The costs of these activities are the responsibilities of the individual agencies and entities.

Alternatives 2 and 3 – Direct and Indirect Effects

Initial costs and revenues of the proposed project have been disclosed for both OHC and the USFS. Cost items for the OHC would include postage, insurance marketing, telephones, electricity, state and county fees, surety bond(s), materials and equipment, construction supplies, construction/reconstruction activities (parking lots, toilets, caretaker's residence, pole barn(s), office, fencing, septic and well system, road improvements, etc.). Revenues are expected from donations, operation of a gift shop, fundraising, membership, OHC funds, increased visitation at the OHC in Walhalla, special grants and supplements. Costs to the USFS include permit preparation and administration. In addition, revenues and costs are associated with recovery of timber value and the cost to get it to market.

An Integrated Resource Service Contract (IRSC) could be used to fund some of the landscape restoration work. The IRSC was developed for use in implementing stewardship contracting projects when the value of services exceeds the value of the goods. In this case, service work would include but not be limited to tree, stump and brush removal, road improvements, seeding, mulching, tree trimming, mowing, bush-hogging, final grading of parking lot and building sites. Funding could come from the value of the timber removed on this project along with other timber sales on the Francis Marion and Sumter National Forests.

Revenues and costs were discounted to a base year of 2011 and have been adjusted for a 3.5 percent inflation rate and a discount rate of four percent. The full economic analysis is contained in the project file.

Table 3.5.3-1 Economic Comparison of the Alternatives

	Alternative 1 (All Partners)	Alternative 2 – Proposed Action		Alternative 3	
		OHC	FS	OHC	FS
Present Value of Costs	0	($447,000)	($92,000)	($443,000)	($92,000)
Present Value of Benefits	0	$472,000	$6,000	$472,000	$6,000
Present Net Value	0	$25,000	($86,000)	$29,000	($86,000)
B/C Ratio	0	1.06	0.06	1.07	0.06

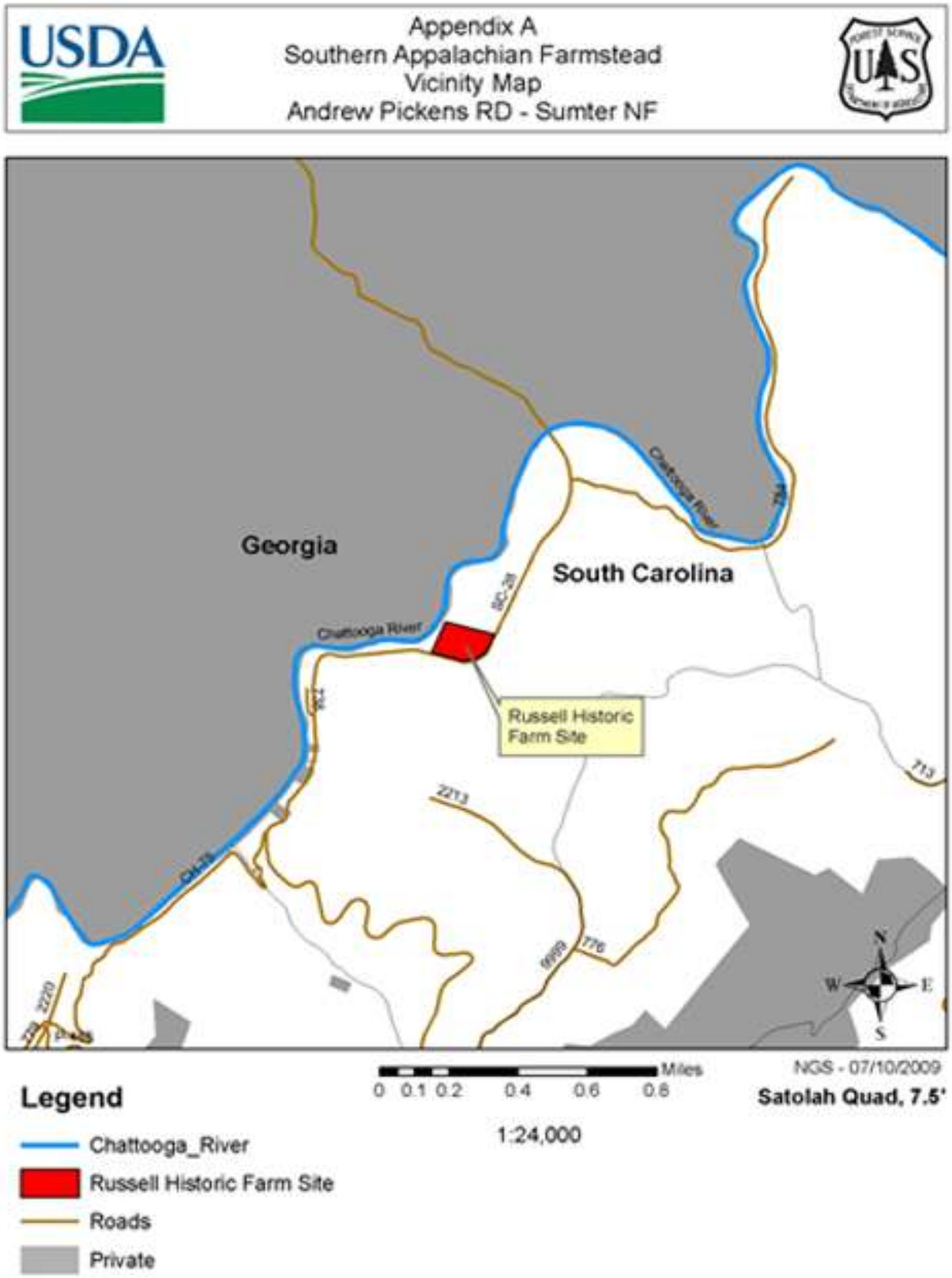
*** rounded to nearest thousand dollars**

Alternatives 2 and 3 – Cumulative Effects

A list of past, present and reasonably foreseeable activities can be found in Table 3.1-1. The costs of these activities are the responsibilities of the individual agencies and entities. The addition of a special use permit to OHC would require them to handle routine maintenance and monitoring in the area thus reducing some costs to the Forest Service for this activity. There would not be a cumulative measureable increase in costs to the other activities that are currently conducted in the area as a result of this project.

APPENDIX A MAPS/GRAPHICS OF ALTERNATIVES

VICINTY MAP OF ALTERNATIVE 1



GRAPHIC OF ALTERNATIVE 2

GRAPHIC OF ALTERNATIVE 3

APPENDIX B AGENCIES/PEOPLE CONSULTED

Interdisciplinary (ID) Team

- Mike Crane – Team Leader, Andrew Pickens District Ranger
- Michelle Burnett – GIS, Planning and Public Affairs Staff Officer
- Jim Bates – District Archaeologist
- Jeff Magniez – Zone Wildlife Biologist
- Robbin Cooper – Forest Landscape Architect
- William Hansen– Forest Hydrologist
- Jason Jennings – Forest Soil Scientist
- Jim Knibbs – Environmental Coordinator
- Jeanne Riley – Forest Fisheries Biologist

Other Major Contributors

- Bo Shelby – Confluence Research Consulting (Social Analysis)
- Doug Whittaker – Confluence Research Consulting (Social Analysis)

Agencies Contacted/Consulted

- Oconee County Heritage Center
- South Carolina Archives and History Center, State Historic Preservation Office
- Tom Swayngham, SC DNR

Tribes Consulted

- Yolanda Saunooke, Tribal Historic Preservation Office, Eastern Band of Cherokee Indians
- Tyler B. Howe, Tribal Historic Preservation Office, Eastern Band of Cherokee Indians

Public Comments Received

All public comments are located in the project file

The following individuals responded during the scoping/30-day notice and comment period in 2009:

Aaron Schwartz
Allen Hedden
Allison Barth
Anna Wilson
Betty G. Rose
Bill Alexander
Brad Lacey
Brian Bert
Brian Jacobson
Bryce Yarbrough
Butch Clay
Buzz Williams
Carol Beck
Carroll Gambrell
Cece Parker
Chad Spangler
Charlene Coleman
David Burton
Deanna DeFoor
Dickie Tillman
Donald Kinser
Donald O'Brien III
Edna Harris
Etowah Eddy/Rick Bellows
H. Byron Gaar III
J. Brent Austin
Jack Wise
Jeff Greiner
Jill and Steve Kester
Jim Tibbetts
Joe Crowther
Karen Saunders
Lisa Fierman
Lyle Collotzi
Maria Jacobson
Mark Singleton
Mark Stenger
Michael & Fran Willimon
Michael Hackenberg
Milt Aitkin
Randy Smith
Robert Maxwell
Steve Wallace
Tom Swayngham
Vincent Zappia
Wayne Link
Will Leverette
William Gatling
William Foster
Theodore Snyder
Jill Wrenn
Don Piper
Janet Dennis
Gavin Fay
Bruce Williams
George Polk
Matt Muire
Jan Kinn
David Asbell
Jack Sorrell
Ann Hibbard
GA Canoeing Association
Pauline Thynne
George Hedrick
Doug Adams
Frank Crane
Richard Penn
Roger Huff
GA Forest Watch
Paul Douglass
Rebecca Connelly
Peter Wiechers
Charles Wier
April McEwen
Tina Hopey
Harriett Salley
Patriot's Hall Association
Dwight and Janie Adams
Michael Clarke
Roger Nott
Lindsay Meeks
Rebecca DeFoor
Wanda Alderson
David Howard
Scott Brame
Robert Moir & Janet Danforth
Curtis Clark
Douglas and Ginny Deane
SC Dept. of Archives & History

APPENDIX C MONITORING PLAN

A. Monitoring Upper River Segment Use

The SAF parking lot would be monitored by the permittee and the Forest Service to assess impacts on use levels in the area and the upper segment of the Chattooga WSR. The goal is to insure that new actions to create the SAF do not violate capacities established in amendments proposed in this EA and Amendment Number 1 of the *Revised Land and Resource Management Plan, Sumter National Forest* (Forest Plan).

The on-site caretaker would monitor visitor use (especially during peak use periods when the parking lot at Highway 28 is full) to determine where people are going. This monitoring would be coordinated with similar use monitoring associated with the upper segment of the river. If monitoring shows that SAF parking is increasing use beyond capacities, actions will be taken to reduce those higher use levels. Following Forest Service Manual (FSM) 2354.41a, indirect measures would be applied first. These include but may not be limited to signing SAF parking separate from traditional use parking for anglers, hunters and hikers. If those measures are unsuccessful at keeping SAF parking-related use from exceeding upper segment capacities, direct measures may limit parking of non-SAF users at the site to the five spaces identified in this EA. Other potential actions may limit SAF parking to two hours, require a permit, or physical separation of the 30 SAF-related parking spaces from the five slated for traditional uses.

B. Outstandingly Remarkable Values

Yearly Forest Plan monitoring reports (Monitoring Question #12) along with Amendment Number 1 monitoring would track any impacts to the upper segment of the Chattooga River to determine if outstandingly remarkable values are being protected.

C. National Register of Historic Places

Monitoring would be done to determine if impacts to the site are occurring from use including physical destruction, neglect and deterioration, alteration not consistent with the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68), removal from a historic location, and introduction of visual, atmospheric, or audible elements or changes in property use that diminish historic integrity.

Monitoring Questions to Address Impacts to the Site's Adherence to Requirements of the National Register of Historic Places

1. Are the impacts of previous neglect being reversed through direct and accurate improvements made to the historic structures and landscapes?

Item: Condition of existing historic structures and landscapes
Technique: Systematic observations, inspections by agency archeologists

2. Are all alterations to existing structures consistent with and appropriate to the time period of the original Russell Farmstead?

Item: Appropriateness of all improvements, modifications, and repairs of existing structures
Technique: Required review and approval from agency archeologists before and during work activities, systematic inspections

3. Are the new structures in keeping with the architectural integrities of the original Russell Farmstead?

Item: Historical integrity of the NRHP site
Technique: Required review and approval of all additional structures from agency archeologists prior to installation or site preparations

APPENDIX D PROPOSED AMENDMENT #2 TO THE REVISED LAND AND RESOURCE MANAGEMENT PLAN, SUMTER NATIONAL FOREST

This amendment allows for restoration of the historic landscape within the Southern Appalachian Farmstead project area consisting of approximately 22 acres northwest of Russell Mountain and State Highway 28 (also known as the Burrells Ford Road) near its crossing with the Chattooga River within the Andrew Pickens Ranger District, Oconee County, South Carolina. Edits are made to forest plan standards and to the desired conditions for Management Prescriptions **2.A.3 Designated Recreational River Segments** and **11. Riparian Corridors**.

The following changes will be made to the Revised Land and Resource Management Plan, Sumter National Forest:

- **Page 2-4.** FW-1 is deleted and replaced with: Water quality, soil productivity, and channel structure are protected using best management practices to avoid impacts to water quality and soils. Where riparian prescription direction differs from BMP, the more restrictive or protective prescription will be followed, except for within the Southern Appalachian Farmstead (SAF). Within the SAF, streamside management buffers that are consistent with the BMPs will be used. Seed mixtures and the removal of large woody debris added by harvest activities suggested in the state BMP for Forestry may not be followed when they conflict with native vegetation and aquatic habitat objectives.

- **Page 3-12.** Standard 2.A.-14 is deleted and replaced with: Possessing or using a saddle, pack, or draft animal is prohibited within the corridor unless on a designated trail or road or within the Southern Appalachian Farmstead project area.

- **Page 3-42. W**ithin the Southern Appalachian Farmstead project area,
- Tables 3-9 and Table 3-10 are deleted and replaced with the following tables.

- Table 3-9. Riparian Corridor Minimum Widths For Perennial Streams, Lakes, Ponds, Or Wetlands *(in feet, measured as described above)*

PHYSIOGRAPHIC AREA	***Slope Class***		
	0-30%	***31-45%***	***46% +***
ALL	100	125	150
Southern Appalachian Farmstead	40	125	150

Table 3-10. Riparian Corridor Minimum Widths for Intermittent Streams

PHYSIOGRAPHIC AREA	***Slope Class***		
	0-30%	***31-45%***	***46% +***
ALL	50	75	100
Southern Appalachian Farmstead	40	75	100

- **Page 3-43.** Standard 11-11 is deleted and replaced with: Tethering or corralling of horses or other livestock is not allowed within 100 feet of stream courses or lakes, except within the Southern Appalachian Farmstead (SAF). In the SAF project area, tethering or corralling of horses or other livestock is not allowed within 40 feet of stream courses or lakes.

- **Page 3-44**. Standard 11-16 is deleted and replaced with: Tree removals may only take place if needed to enhance the recovery of the health, diversity and/or complexity of vegetation, rehabilitate both natural and human-caused disturbances, provide habitat improvements for PETS or riparian-dependent species, suppress pest insect populations, reduce hazardous fuel buildup, provide for visitor safety, for approved facility construction/renovation and to improve scenic quality or for restoration of historic landscapes within the Southern Appalachian Farmstead.

- **Page 3-17.** The desired condition for Management Prescription 2.A.3 is amended by deleting the first paragraph on page 3-17 and replacing it with the following paragraph:

> Visitors seeking solitude may find it difficult to achieve, particularly in peak-use rafting and fishing seasons. On National Forest system land, visitors enjoy a natural-appearing setting with a range of man-made recreational and historical developments. Since there is the potential for large numbers of visitors at peak-use seasons, regulations may be necessary to protect resources and visitors. Facilities provide visitor safety and comfort and protect the river resources. Facilities may include parking areas, trailheads, bulletin boards, interpretive kiosks, signs, restrooms, canoe/raft launches, fishing platforms, picnic sites, historical buildings and farm landscapes within the Southern Appalachian Farmstead, etc. The recreational opportunities are in roaded natural setting.

- **Page 3-41.** The desired condition for Management Prescription 11 is amended by adding the following paragraph immediately before the header **Determination of Riparian Corridors**:

  The following measures apply to streamside buffers along perennial and intermittent streams within the Southern Appalachian Farmstead (SAF):

  - Approximately 50 square feet of basal area in overstory trees will be retained within 40 feet of the perennial stream.
  - If less than 50 square feet of overstory basal area per acre exists, leave overstory trees.

- **Page 3-41.** The desired condition for Management Prescription 11 is amended by deleting the first sentence in the third paragraph in column 2 on page 3-41 and replacing it with the following language: Visitors may encounter developed camping areas, boat launches, fishing piers, and the historical farm landscape within the Southern Appalachian Farmstead.

This amendment is not a significant change to the Sumter National Forest Revised Land and Resource Management Plan. The determination that this is a non-significant amendment is made in accordance with 16 USC 1604(f)(4), 36 CFR 219.10(f) of the planning regulations in effect before November 9, 2000 (as authorized by 36 CFR 219.35 and Appendix B to 219.35 of the current planning regulations, dated November 9, 2000 and published in the *Federal Register* on December 18, 2009) , and Forest Service Manual 1926.5, Land Management Planning, Amendments. This plan amendment meets the criteria for a non-significant amendment because these changes will not "significantly alter the long-term relationship between levels of multiple-use goals and objectives originally projected. . . . [or] have an important effect on the entire forest plan or affect resources throughout a large portion of the planning area during the planning period" (FSM 1926.52). The NEPA analysis for this change is documented in a Decision Notice and Environmental Assessment.

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